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WILL THE FAMILY DOCTOR SURVIVE?

Chairman's Address

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At a time when the medical pendulum is swinging further and further toward specialization, the future of general practice offers an endless field for speculation—and endless speculations are being offered about it. The current controversy regarding the family doctor's place in the scheme of medical practice recalls the words of Solomon "The thing that hath been, it is that which shall be; and that which is done is that which shall be done: and there is no new thing under the sun." [1]

Some of you are old enough to remember that after the first world war there was a similar trend toward specialism. Then, as now, obituary notices of the family doctor were being published. Long before World War I—in 1902—Sir William Osler told the Canadian Medical Association that "it is amusing to read and hear of the passing of the family physician." [2]

FACTORS RESPONSIBLE FOR THE PRESENT TREND TOWARD SPECIALIZATION

The present trend toward specialism is due to a number of factors. One is the premium placed on specialization by the army and navy during the war. Human nature being what it is, how could the young medical officer fail to be influenced by the enormously greater prestige, rank and pay accorded to the specialist in the armed forces? The result is being seen in the overwhelming number of medical veterans who have expressed the desire to specialize rather than to enter or to continue general practice.

Even before the war, however, the specialty boards had begun to separate the specialized sheep from the generalized goats. Many hospitals now are demanding certification as a requisite for membership on their staffs. The Veterans Administration has announced its preference for men who are certified and is offering them higher rank and higher pay as inducements. Such organizations as the Workmen's Industrial Compensation Commissions and the Office of Vocational Rehabilitation are rewarding certified specialists with fees double or triple those paid the general practitioner.

Another potent reason for the trend to specialization is to be found in the type of training offered in most of our medical schools and hospitals. Even in those institutions which profess to train men for general practice it is hard for the students and house officers to escape the subtle influence of knowing that certification is required of their teachers and of the hospital staff members. Even though these men may pay lip service to the family doctor, they have themselves become specialists. The student can hardly be blamed for thinking, when one of his preceptors advises him to go into general practice, "What you are speaks so loud that I cannot hear what you say."

Still another blow has been dealt general practice by the growing popularity of practice in groups or clinics composed largely of specialists. Over and over the changes are rung on the theme that efficient medical practice can be given only by groups of specialists; that "solo" practice is wasteful and inefficient; that the family doctor must therefore perish from the face of the earth, and the sooner he disappears the better for mankind. A booklet just off the press, dated "spring 1946," bears the title "Solo or Symphony." It was published under the auspices of the Medical Group Practice Council, which, if one is to judge from the membership, must be an offspring of a union between Dr. Ernst Boas's Physicians Forum and Dr. John Peters' Committee of Physicians for the Improvement of Medical Care. This booklet leaves the impression that medicine in the future must be practiced altogether by widely scattered medical soloists or altogether by symphonic groups; that there is no room in this country for both types of practice. And, again judging from the membership, the council would vote for medical symphonies conducted by our modern Wagner, with all musical scores emanating from Washington.

A final factor in the trend to specialism is the present spending spree, which extends even to medical care. Patients who can afford for the first time to pay specialized fees are demanding specialized attention. As Drs. S. A. and S. B. Thompson [3] said in a recent issue of THE JOURNAL, "More and more common is the patient who feels that his diagnostic acumen is such that he can select the proper specialist without benefit of advice from his family doctor."

FACTORS RESPONSIBLE FOR THE SURVIVAL OF THE FAMILY DOCTOR

In spite of the present trend toward specialism, however, a great many people, both lay and medical, feel that the medical profession without the family doctor would be "like the playbill which is said to have announced the tragedy of Hamlet, the character of the

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Read before the Section on General Practice of Medicine at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 3, 1946.

1. Ecclesiastes **1**: 9.

2. Osler, W.: Chauvinism in Medicine, in Aequanimitas with Other Addresses, ed. 2, Philadelphia, P. Blakiston's Son & Co., 1930.

3. Thompson, S. A., and Thompson, S. B.: The Status of the General Practitioner, Present and Future, J. A. M. A. **131**: 514 (June 8) 1946.

Prince of Denmark being left out."[4] The very fact that the family doctor will not stay buried, in spite of the numerous death certificates that have been written for him in the past, argues that he is essential to a balanced medical profession. The multiplication of sections on general practice in medical organizations, beginning with the North Carolina Medical Society in 1936 and culminating with the American Medical Association this year, testifies to the importance of the family doctor.

Those who would substitute for the family doctor practice by specialists—even group practice—overlook the fact that 85 per cent of the ailments for which people consult doctors can be cared for by a competent general practitioner.[5] While it is inefficient and uneconomical for an individual doctor to own an x-ray machine, an electrocardiograph and a basal metabolism outfit to be used once or twice a week, it is equally inefficient and uneconomical to subject a patient with impetigo to a battery of laboratory tests before ammoniated mercury ointment is prescribed. It is also inefficient and uneconomical to have a complete gastrointestinal x-ray made of a girl whose boy friend has jilted her, to find the spastic condition that the family doctor would have cured with understanding sympathy and belladonna.

The 15 per cent of illnesses which constitute the problem cases should rightly be referred to specialists or to groups of specialists. There need be no antagonism between the general practitioner and the specialist. There is room in medicine for both, and the two are needed to complement each other. ("Complement" may be properly spelled with either an e or an i.)

The New York *Times* recently declared editorially that "the general practitioner should be the first line of defense for the patient—the medical 'clearing house.' The family doctor practices the broadest specialty in medicine."[6] Apparently the public is becoming apprehensive lest it lose its best medical friend—the family doctor. The medical profession may well become apprehensive lest it lose the practice of many smaller communities—and larger ones also—to osteopaths, chiropractors and other cultists. People want to know that they have a sympathetic adviser to turn to in time of sickness, and if nothing is done to replace the dwindling supply of family doctors the public will inevitably turn to the cultists, who are quite willing to assume responsibility for the family's health.

If the pendulum swings much further toward specialism it is probable that the law of supply and demand will solve the problem for us. The Committee on the Costs of Medical Care[7] estimated that not more than 18 per cent of the medical population of the country need be specialists. Certainly the proportion of men who are now seeking certification is far above that figure. In periods of such pseudoprosperity as we are having now the specialist is apt to get more than his share of the family's medical dollar. If the economic cycle runs true to form, however, the general practitioner will have his innings ere long. In the dark days of depression that followed the last wave of prosperity quite a number of medical men were forced to abandon their offices and practices for the less dignified but more lucrative job of operating a taxicab or elevator. So far as I know, none of these men were family doctors.

4. Scott, W.: The Talisman, Introduction.
5. The General Practitioner and His Handbag, editorial, North Carolina M. J. **1**: 320 (June) 1940. Hopkins, B. A.: The General Practitioner and Rural Medical Care, South. M. J. **39**: 106 (Feb.) 1946.
6. The Family Doctor, editorial, New York Times, Feb. 9, 1946.
7. Medical Care for the American People: Final Report of the Committee on the Costs of Medical Care, Chicago, University of Chicago Press, 1932, p. 5.

ENSURING THE CONTINUED SURVIVAL OF THE FAMILY DOCTOR

Since it is not likely that many of you would be in attendance on this section if you did not believe in general practice, it is unnecessary to give further arguments for the place of the family doctor. Let us devote the rest of the time at our disposal to considering ways and means of ensuring his survival.

Improving the Quality of General Practice.—First of all, we should face frankly the weaknesses of general practice. According to the Thompsons,[8] the two criticisms most frequently offered are, "first, failure of the general practitioner, on occasion, to differentiate between the trivial and the serious" and, second, "the failure of the general practitioner to observe the limitations of his training."

It must be acknowledged that there is some basis for both these criticisms. Because he is pressed for time, or out of mistaken kindness in considering the cost to the patient, the general practitioner may overlook a fractured wrist by failing to have an x-ray made or a case of amebic dysentery by failing to use the proctoscope and the microscope.

The second critcism, it seems to me, could be averted if more men were to aspire to be family doctors rather than general practitioners in the literal sense. Although I have been using the terms interchangeably, there is a real distinction between the two. Too many general practitioners are afraid that they will lose face with their families if they do not undertake to treat all the ailments for which they are consulted. These men are the ones who are apt to get into trouble by "failure to observe the limitations of (their) training." A family doctor, on the other hand, although he "must know the fundamentals of all medical specialties,"[6] may limit his work as much or as little as he chooses. He does assume responsibility for the care of his families, very much as a general contractor would assume responsibility for the construction of a building. Just as a general contractor, however, would sublet contracts for plumbing, heating, lighting and other highly specialized work, so the family doctor will refer cases requiring special skill to those who are trained to handle them. This principle must have been what Hippocrates had in mind when, in his famous oath, he had the prospective practitioner promise not to "cut for the stone," but to leave that work for others better qualified.

Increasing the Number of Family Doctors.—If the tribe of the family doctor is to increase, it is important that general practice be given a more central place in present day medical education. In the words of Dr. J. E. Livesay,[8] "medical schools should recognize as their first duty the education of doctors for general practice." The editor of the New York *Times* urges that we "make 'general practice' a specialty. Emphasize the treatment of the 'whole man' in our medical schools. Provide special internships and resident training programs for the young physician going into general

8. Livesay, J. E.: Specialization Must Slow Up, Bull. Genesee County M. Soc. **18**: 14 (March 26) 1946.

practice. Teach him not only the technics of modern medicine and surgery but also the relationship of disease to personality, to economics and social problems, but by all means teach him his limitations. It is just as important to know when the water is too deep and when the patient is in need of specialized care as it is to know the routine treatment procedures." [6]

In our young school, the Bowman Gray School of Medicine of Wake Forest College, we have had from the beginning a course in family practice for third and fourth year students. This course is described quite accurately in the catalogue: "The common problems encountered by physicians in caring for patients at home are discussed and illustrated by actual case histories. Emphasis is put not only on the diagnosis and treatment of major diseases but on the management of minor complaints and on the physician's relationship to the patient's family and to other physicians." There is no reason why such a course should not be given in every medical school. Certainly in every community capable of supporting a medical school an alert, capable, progressive general practitioner—or an internist with years of family practice to his credit—can be found who is willing to devote an hour or more a week to giving the upperclassmen the benefit of his ripe experience. Another way to interest students in family practice is to let them serve as junior interns for private patients as well as for service patients.

After he is graduated from medical school, a prospective family doctor should be trained for his job. As a minimum, a two year rotating internship or a year's internship in medicine, followed by six months in pediatrics and six months in obstetrics and gynecology, should be required. An additional period spent in pathology would be well worth while.

The suggestion has been offered that at least three years in general practice should be required before a man can be eligible for a residency or, at least, for certification. Many of our most successful specialists—particularly internists—have laid a broad foundation for their specialty by first engaging in family practice. If this suggestion were to be carried out, it is quite probable that a good many who undertook general practice preliminary to certification would be so impressed with the advantages it offers that they would continue in it. These advantages are steadily increasing as the result of a number of factors.

One factor is the greater consideration which the public—some of it, at least—learned to show for the doctor during the war. Others are the improved tools which the general practitioner has to work with, the increasing use of prophylactic measures against various diseases and the greater variety of specific remedies which have become available to simplify the treatment of such diseases as diabetes, pernicious anemia and many infections. While it is true that the newer laboratory procedures devised serve to complicate rather than simplify medical practice, the most important laboratory tests, as the late Francis W. Peabody [9] so forcibly pointed out, are "those which every educated doctor should be able to carry out," for "in spite of the great contributions which the laboratory has made to clinical medicine there has been surprisingly little change in the . . . technical methods which are essential for good practice."

9. Peabody, F. W.: Doctor and Patient, New York, Macmillan Company, 1939, p. 64.

Improved highway systems are making it possible for the general practitioner in rural areas to see more patients in a far shorter time, with less wear and tear on his nerves and on his automobile. The erection of small hospitals or health centers in smaller towns or in thickly settled rural areas is making available to the general practitioner the facilities for diagnosis and treatment which the recent graduate is trained to rely on. If the Hill-Burton bill becomes law, the building of hospitals in areas where they are needed should be greatly encouraged. The new Veterans Administration, although it has shown preference for specialists in its hospitals, has also given the general practitioner a boost by its recently adopted policy of allowing and even encouraging the veterans to go to their own family doctors rather than to the veterans' hospitals. This plan is now in operation in about ten states, and at least twenty other state medical societies are negotiating with the Veterans Administration.

There is no reason why the benefits of group practice should be denied the general practitioner who prefers playing with a symphony to being a soloist. In many larger communities two or more family doctors are joining forces to form partnerships or clinics or merely to share offices and expenses. Such a combining of forces enables each of them to assume a major interest without necessarily limiting his work to that specialty. Overhead expense can be reduced by the use of a common reception room and by sharing laboratory facilities and office personnel. Another advantage is that, by substituting for one another on afternoons off, the members of such a group can have more free time without loss of income.

SHALL THE GENERAL PRACTITIONER BE CERTIFIED?

Two of the burning issues in the current controversy over the general practitioner are his position on the hospital staff and the question of a "specialty" board for general practice. Many hospitals are now limiting staff membership to doctors certified as specialists. In many cases the adoption of this policy resulted from the failure of a general practitioner to "observe the limitations of his training." To allow every man who has a medical license to perform all sorts of operations and to carry out all manner of highly technical procedures not only jeopardizes the lives of patients but sets a bad example for the house officers and, in a teaching hospital, for the students. On the other hand, many competent general practitioners have been thus debarred from hospitals, and the students and house officers have been deprived of an opportunity to learn something of the art of being a family doctor.

One answer to the problem of staff membership, of course, would be to set up a "specialty" board for general practitioners. Resolutions to create such a board have been repeatedly introduced in the House of Delegates of the American Medical Association. Those who favor the idea feel that it would stimulate the men in general practice to keep abreast of medical progress, that it would do much to raise their status in the eyes of the public and that the increased prestige that would result from certification would attract many of our best doctors into family practice. Those opposing the board feel that it would defeat the purpose for which it was created by driving some men out of general practice; for, to mean anything in the eyes of

the public and of the profession, such a board should offer a real test of a man's ability. In all probability, some of the specialty boards already existing would be easier to pass than would that of general practice if it should be properly conducted.

In 1941 the reference committee of the American Medical Association which considered a resolution asking for the creation of a general practice board rejected it on the ground that when a general practitioner passes the state or national board he is automatically certified for general practice and that, "From there on, . . . recognition must come from the . . . place he makes for himself in the hearts of his loyal patients and in his own community. What can empty honors mean to him or a certification which means little and achieves less? After all, is not a good general practitioner the grandest thing in the world of medicine anyway?" [10]

CONCLUSION

Many questions have been raised in this paper which are not answered. I think, however, that the question "Will the family doctor survive?" can be answered most emphatically in the affirmative. Certainly if the family doctor does not survive there is little chance that a free medical profession will survive. In normal times the average citizen cannot afford to go from one specialist to another unless the government is paying his bills. If John Q. Public's family doctor deserts him, it is highly probable that he will string along with Messrs. Wagner, Murray and Dingell in demanding the socialization of medicine.

What Osler said of the family doctor forty-four years ago is, if anything, more than ever applicable today: "There never was a time in our history in which he was so much in evidence, in which he was so prosperous, in which his prospects were so good or his power in the community so potent. . . . He is the standard by which we are measured. What he is, we are; and the estimate of the profession in the eyes of the public is their estimate of him." [2]

ABSTRACT OF DISCUSSION

Dr. Eric A. Royston, Los Angeles: This is the first time that the Section on General Practice of Medicine has held a meeting under the auspices of the American Medical Association, with the blessing and recognition of the Association. We are about to witness the slow assembling of the bomb which is going to burst with atomic force over the heads of the medical profession, particularly those concerned with the administration of the medical schools and the administration of hospitals. As general practitioners we are claiming more space in our hospitals. We who do 85 per cent of the work of the medical profession, particularly the work that may perhaps be called the menial jobs, have been content to sit back and, so to speak, let the tail wag the dog, but I believe the day is dawning when we are going back to the time when the dog is going to wag his own tail. The Section on General Practice of Medicine is going to be just what its officers make it, and we as members of the section are going to find that our officers will do a better job for us if we give them our wholehearted support. Those of you who have held offices of various kinds know how difficult it is sometimes to get help, and today, at the very outset of our work as a section, I bespeak for our officers the wholehearted cooperation of every man and every woman in the section.

10. Proceedings of the House of Delegates of the American Medical Association, Ninety-Second Annual Session, 1941, p. 69.

STREPTOMYCIN IN THE TREATMENT OF INFECTIONS

A Report of One Thousand Cases

THE COMMITTEE ON CHEMOTHERAPEUTICS AND OTHER AGENTS, NATIONAL RESEARCH COUNCIL: CHESTER S. KEEFER, M.D., CHAIRMAN; FRANCIS G. BLAKE, M.D., NEW HAVEN, CONN.; JOHN S. LOCKWOOD, M.D., NEW HAVEN, CONN.; PERRIN H. LONG, M.D., BALTIMORE; E. K. MARSHALL JR., M.D., BALTIMORE, AND W. BARRY WOOD JR., M.D., ST. LOUIS

Our purpose in this report is to acquaint the medical profession with the results obtained in the treatment of 1,000 cases of various infections with streptomycin. This study was carried out by fifty-five investigators [1] accredited to the Committee on Chemotherapeutic and Other Agents of the National Research Council; in addition, many individual physicians cooperated with the Committee by reporting the results of treatment with streptomycin.[2]

The discussion of these cases will be concerned with overall results in various groups of cases. Separate and detailed reports will be made by individual investigators in due course of time.

The streptomycin used in this study was provided by the National Research Council from supplies allocated to it by the Civilian Production Administration for clinical investigations recommended by the Committee. The costs of the streptomycin were covered by grants-in-aid to the National Research Council from eleven pharmaceutical and chemical companies.[3]

SELECTION OF CASES

In order to conserve valuable material and to gather as much information as possible in the briefest period of time, the Committee selected the following group of infections for study. It was the responsibility of the Committee to direct the investigation toward those infections that were most likely to be benefited by it and to those that were resistant to penicillin and the sulfonamides. The infections selected were:

Tularemia.
Hemophilus influenzae infections.

1. Accredited clinical investigators of the Committee on Chemotherapeutic and Other Agents, National Research Council: Dr. John D. Adcock, Ann Arbor, Mich.; Dr. Fuller Albright, Boston; Dr. Hattie E. Alexander, New York; Dr. Wilmer Allen, Hartford, Conn.; Dr. William Altemeier, Cincinnati; Dr. George Baehr, New York; Dr. James M. Baty, Boston; Dr. Paul Beeson, Atlanta, Ga.; Dr. Francis G. Blake, New Haven, Conn.; Dr. M. A. Blankenhorn, Cincinnati; Dr. Arthur L. Bloomfield, San Francisco; Dr. Paul L. Boisvert, New Haven, Conn.; Dr. Wilburt C. Davison, Durham, N. C.; Dr. Katherine Dodd, Cincinnati; Dr. Harry F. Dowling, Washington, D. C.; Dr. Maxwell Finland, Boston; Dr. Lee Foshay, Cincinnati; Dr. Frank Glenn, New York; Dr. Paul György, Philadelphia; Dr. Paul Hamilton, Los Angeles; Dr. George T. Harrell, Winston-Salem, N. C.; Dr. Henry F. Helmholz, Rochester, Minn.; Dr. W. E. Herrell, Rochester, Minn.; Dr. Russell D. Herrold, Chicago; Dr. H. C. Hinshaw, Rochester, Minn.; Dr. John S. Hunt, Nashville, Tenn.; Dr. Thomas Hunter, New York; Dr. Ernest E. Irons, Chicago; Dr. Alfred Wilmot Jacobsen, Buffalo; Dr. C. A. Janeway, Boston; Dr. Charles Johnston, Detroit; Dr. Lewis Kane, Boston; Dr. Chester S. Keefer, Boston; Dr. William J. Kerr, San Francisco; Dr. Herman L. Kretschmer, Chicago; Dr. John S. Lockwood, New Haven, Conn.; Dr. Perrin H. Long, Baltimore; Dr. Champ Lyons, New Orleans; Dr. Frank Meleney, New York; Dr. C. Philip Miller, Chicago; Dr. Roy D. McClure, Detroit; Dr. H. McCorkle, San Francisco; Dr. Walsh McDermott, New York; Dr. C. F. McKhann, Cleveland; Dr. Robert F. Parker, Cleveland; Dr. Walter S. Priest, Chicago; Dr. I. S. Ravdin, Philadelphia; Dr. Howard Slavin, Rochester, N. Y.; Dr. W. W. Spink, Minneapolis; Dr. W. S. Tillett, New York; Dr. James J. Waring, Denver; Dr. Charles E. Watts, Seattle; Dr. Charles P. Wilson, Portland, Ore.; Dr. Max M. Wintrobe, Salt Lake City, and Dr. W. Barry Wood, St. Louis.

2. The plan of investigation on which this study was based has been fully described by the chairman of this commiittee in an article entitled "Official Statement Concerning Streptomycin," published in The Journal, May 9, 1946, p. 31.

3. List of companies contributing to the streptomycin program: Abbott Laboratories, Commercial Solvents Corporation, Heyden Chemical Corporation, Eli Lilly and Company, Merck and Company, Parke, Davis and Company, Charles Pfizer and Company, Schenley Laboratories, E. R. Squibb and Sons, the Upjohn Company and Wyeth, Incorporated.

Urinary tract infections due to gram-negative bacilli resistant to sulfonamides.
Typhoid.
Salmonella infections.
Acute brucellosis with bacteremia.
Bacteremia due to gram-negative bacilli.
Bacterial endocarditis due to gram-negative bacilli.
Friedländer's bacillus (Klebsiella pneumoniae) pneumonia.

STATEMENT CONCERNING TUBERCULOSIS

When the program of the Committee was started on March 1, 1946 it was impossible for us to develop a wide study of tuberculosis. Only the cases that were already under investigation prior to March 1 were continued in order to complete this human experiment. This policy was necessitated by the small supplies of streptomycin available and the magnitude and long-range nature of the problem. It is the hope of the Committee that adequate ways and means may be found for studying the application of streptomycin to tuberculosis so that its place in the treatment of this disease can be defined.

PREPARATION OF STREPTOMYCIN FOR INJECTION

Streptomycin is dispensed either as the sulfate or the hydrochloride. Both salts are extremely soluble in distilled water or isotonic solution of sodium chloride. Concentrations of 100 to 175 mg. per cubic centimeter may be prepared for intramuscular injection, and 50 to 100 mg. may be dissolved in 5 to 10 cc. of saline solution for intrathecal injection. It is important to use enough solution so that the preparation is clear and free of undissolved particles. The total volume that is injected should be kept as small as possible, and the site of injection should be changed each time. The specifications for streptomycin which were made effective by the Food and Drug Administration of the Federal Security Agency on July 15, 1946 are as follows:

1. The minimum potency of commercial streptomycin shall represent not less than the equivalent of 300 micrograms of streptomycin base per milligram of dry powder. The potency of crystalline streptomycin base has been established at 1,000 micrograms per milligram.
2. It is sterile.
3. It is nonpyrogenic.
4. It is nontoxic.
5. Its moisture content is not more then 3 per cent.
6. It should cause no greater fall in blood pressure when injected intravenously into cats on the basis of 300 micrograms per kilogram than the equivalent of 0.1 microgram per kilogram of histamine base.
7. It contains no streptothricin.
8. It forms a substantially clear solution with a p_H of 5.0-7.0 when the dry streptomycin is reconstituted with sterile distilled water in a concentration of 50,000 micrograms per cubic centimeter.
9. The expiration date of vials of streptomycin is eighteen months after the month during which the batch of streptomycin was released. (Refrigeration is required.)

MODES OF ADMINISTRATION

There are three common routes of administration of streptomycin—intramuscular, subcutaneous and topical, including intrathecal, intraperitoneal and intrapleural. For systemic treatment the intramuscular route is the one of choice. In meningitis, both intermittent, intramuscular and intrathecal injections are necessary. In empyema, intrapleural injections are desirable, and in peritonitis, intramuscular and in some instances intraperitoneal injections are required. There are no advantages to giving streptomycin intravenously, and it is more convenient to administer it intramuscularly; 1 cc. of 1 per cent procaine hydrochloride may be added to 4 cc. of solution to decrease the pain at the site of injection.

Oral administration is useless in systemic infections, since so little streptomycin is absorbed from the gastrointestinal tract.[4] Following large doses by mouth, small amounts can be found in the urine. As very little is absorbed from or destroyed in the gastrointestinal tract, a high concentration of the drug can be maintained therein and thus exerts a bacteriostatic effect. Bacteria in the gastrointestinal tract can be greatly reduced in number following oral administration, and this method of administration has been used in preparing patients for operations on the colon. The drug may be given in orange juice or other liquids without difficulty.

Intramuscular Injection.—Maximum serum levels of streptomycin are obtained within one to three hours after a single intramuscular injection, and there is a gradual decrease over a period of ten to twelve hours. The concentration in the blood parallels the dosage administered. Additive effects are obtained by repeating the injections at three or four hour intervals.

Subcutaneous Injection.—Intermittent subcutaneous injection can be used in lieu of intramuscular injection. Following subcutaneous injections it has been demonstrated that maximum serum levels are obtained within two to three hours. Pain and irritation at the site of injection may be a limiting factor in using this route.

Intrathecal Injection.—Very little streptomycin diffuses into the spinal fluid following intramuscular injection.[4] In the presence of meningitis, larger amounts may be found in the fluid. However, our own experience shows that it is important that intrathecal injection be used along with intramuscular therapy in the treatment of bacterial meningitis. Twenty-five to 100 mg. in 5 to 10 cc. injected every twenty-four hours is usually adequate, since the drug is absorbed slowly from the subarachnoid space.

Oral Administration.—As already stated, little streptomycin is absorbed from the gastrointestinal tract, and only small amounts can be detected in the blood and urine following large daily doses by mouth. The streptomycin appearing in the stools following parenteral injection is extremely small in amount; it probably enters from the bile. Bacteria that are sensitive to streptomycin in the bowel are greatly reduced in number following oral therapy. This method may be useful in preparing patients for surgical operations on the large intestine or in cases of gastrointestinal infections in which it is desirable to reduce the number of infecting organisms. Two to 3 Gm. a day may be necessary for maximum results.

Inhalation.—Streptomycin has been used by nebulization in the treatment of bronchopulmonary infections. Concentrations of 50 mg. per cubic centimeter may be inhaled to a total amount of 500 mg. in a twenty-four

4. Elias, W. F., and Durso, J.: Blood, Urine and Fecal Levels of Streptomycin in the Treatment of Human Infections of E. Typhosa, Science **101:** 589-591 (June 8) 1945. Anderson, D. G., and Jewell, M.: The Absorption, Excretion and Toxicity of Streptomycin in Man, New England J. Med. **233:** 485-491 (Oct.) 1945. Zintel, H. A.; Flippin, H. F.; Nichols, A. C.; Wiley, M. M., and Rhoads, J. E.: Studies on Streptomycin in Man: I. Absorption, Distribution, Excretion and Toxicity, Am. J. M. Sc. **210:** 421-430 (Oct.) 1945. Heilman, D. H.; Heilman, F. R.; Hinshaw, H. C.; Nichols, D. R., and Herrell, W. E.: Streptomycin: Absorption, Diffusion, Excretion and Toxicity, Am. J. M. Sc. **210:** 576-584 (Nov.) 1945. Buggs, C. W.; Pilling, M. A.; Bronstein, B., and Hirshfeld, J. W.: The Absorption, Distribution and Excretion of Streptomycin in Man, J. Clin. Investigation **25:** 94-102 (Jan.) 1946. Adcock, J. D., and Hettig, R. A.: Absorption, Distribution and Excretion of Streptomycin, Arch. Int. Med. **77:** 179-195 (Feb.) 1946. Peterson, R.; Harford, C. G., and Wood, W. B.: Personal communication to Committee.

hour period. It is a curious fact that very little streptomycin is absorbed from the lungs, so that none is detected in the blood; some may be recovered from the urine.[4]

DISTRIBUTION IN BODY FLUIDS

It has already been stated that but little streptomycin diffuses from the blood into the cerebrospinal fluid and that only minimal amounts are found in the blood following inhalation or oral administration. Following parenteral injection, streptomycin passes into the pleural fluid,[4] the peritoneum,[4] ocular fluid [5] and the bile.[4] It also passes through the placenta into the fetal circulation and amniotic fluid.[4] It has been found in the umbilical cord blood and amniotic fluid within ten minutes following intravenous injection into the maternal circulation. The concentration in the cord blood is less than half that in the maternal blood. When high concentrations are desired in the pleural cavity, it is well to inject material directly into it.

EXCRETION

Most of the streptomycin that appears in the blood is excreted by the kidneys into the urine. Small amounts are excreted in the bile and into the pleural, peritoneal and cerebrospinal fluid. Following a single injection approximately 60 to 80 per cent of the material appears in the urine within a twenty-four hour period.[4] With such high concentrations, adequate amounts for the treatment of urinary tract infections can be obtained with ease.

TABLE 1.—*Summary of Results in 1,000 Cases*

	Number of Patients	Results: Recovered	Improved	No Effect	Died
Urinary tract infections	409	171	145	84	9
H. influenzae meningitis	100	66	14	3	17
Bacteremia	91	49	12	4	26
Tularemia	67	63	..	3	1
Pulmonary infections	44	15	14	7	8
Brucellosis	45	..	30	15	..
Typhoid	51	..	51	..	..
Salmonella	26	10	2	6	8
Peritonitis	53	36	3	2	12
Meningitis due to gram-negative organisms other than H. influenzae	14	5	5	..	4
Shigella dysenteries	2	2	..	..	..
Miscellaneous infections	98	36	29	30	3
Totals	1,000	453	305	154	88

RESULTS OF TREATMENT

The results of treatment in this series are summarized in table 1.

URINARY TRACT INFECTIONS

The 409 cases of urinary tract infection were caused by a great variety of bacterial species. The overall recovery rate was 42 per cent. The results of treatment of these cases with streptomycin are shown in table 2.

The intramuscular route of administration was used throughout, with the exception of 4 cases treated by intravenous injection and 3 in which subcutaneous introduction of the drug was employed. In none of the cases treated by routes other than intramuscular was the result outstandingly successful.

The daily dosage varied from 0.25 to 5.0 Gm., but most cases were treated with 1 or 2 Gm. The duration of treatment was five to seven days in the majority of patients; the average total dose was 7.5 to 10.0 Gm.

A high percentage of the cases treated were chronic infections of two months' to twenty years' duration. The follow-up periods varied from none to two months, with most of them one or two weeks long.

TABLE 2.—*Results in Urinary Tract Infections*

Infecting Organism	Number of Patients	Results: Recovered	Improved	No Effect	Died
Escherichia coli	154	81	40	31	2
Pseudomonas aeruginosa	36	17	10	9	0
Proteus vulgaris	28	15	8	5	0
Aerobacter aerogenes	22	14	5	3	0
Alkaligenes fecalis	5	2	2	1	0
Klebsiella pneumoniae	6	3	1	2	0
Hemophilus influenzae	1	1	0	0	0
Gram-negative bacilli unidentified	12	8	1	3	0
Staphylococcus only	3	1	2	0	0
Streptococcus fecalis	3	2	1	0	0
Streptococcus unidentified	1	1	0	0	0
Staphylococcus and streptococcus	4	1	1	2	0
Mixed infections:					
Gram-negative organisms only	72	13	36	18	5
Gram-negative and gram-positive organisms	62	12	38	10	2
Totals	409	171	145	84	9

Of the patients that improved, 19 per cent relapsed after treatment was stopped. Nearly all these relapses occurred within one week. The greatest interval between the end of treatment and relapse was seven weeks.

Almost all these infections had been treated previously with sulfonamides and penicillin. Few received other specific treatment concomitantly with streptomycin.

Comment.—The following points are clear:

1. This group of infections is complex, and in many cases it is extremely difficult to assess the relative merits of streptomycin and other factors in influencing recovery.

TABLE 3.—*Results in Bacteremia*

Infecting Organism	Number of Patients	Results: Recovered or Improved	No Effect	Died
Escherichia coli	34	25	1	8
Proteus vulgaris	5	5	..	..
Pseudomonas aeruginosa	10	6	..	4
Aerobacter aerogenes	6	4	..	2
Klebsiella pneumoniae	2	2	..	..
Hemophilus influenzae	4	4	..	..
Spirillum	1	1	..	..
Neisseria	1	..	..	1
Shigella flexneri, type Y	1	..	..	1
Gram-negative bacilli unidentified	3	1	..	2
Staphylococcus	6	3	1	2
Streptococcus unidentified	7	3	1	3
Streptococcus fecalis	3	2	..	1
Enterococcus	2	2	..	..
Bacillus anthracis	1	1	..	..
Gram-positive organisms unidentified	1	1	..	..
E. coli and Str. fecalis	1	..	..	1
E. coli and A. aerogenes	1	..	1	..
Ps. aeruginosa and A. aerogenes	1	1	..	..
E. coli, A. aerogenes and Ps. aeruginosa	1	..	..	1
Totals	91	61	4	26

2. Many of the cases showed definite clinical improvement without bacteriologic remission.

3. Many of the patients who improved were cured bacteriologically but did not recover clinically because no surgical treatment was given.

4. Infections due to a single organism responded oftener than did mixed infections.

5. Leopold, I. H., and Nichols, A.: Intraocular Penetration of Streptomycin Following Systemic and Local Administration, Arch. Ophth. **35**: 33-38 (Jan.) 1946.

5. The rapid development of resistance in vivo is frequent and accounts for the failure of streptomycin to sterilize the urine in many cases.

6. A minimal follow-up period of one week is essential before any urinary tract infection can be considered recovered or permanently improved.

7. The adequate dosage appears to be 1 to 2 Gm. a day for five to eight days.

8. There seems to be little difference in the clinical response between Escherichia coli, Proteus vulgaris, Aerobacter aerogenes and Pseudomonas aeruginosa.

The average daily dose in the recovered patients was 0.5 Gm. intramuscularly and 0.06 Gm. intrathecally for nine and seven days respectively. In the patients in whom streptomycin failed, the average daily dose was approximately the same but the patients were treated for a shorter period of time.

Bacteremia was present before treatment in 27 of the patients who recovered and in 3 of the 20 in whom treatment failed.

Three of the cases that showed bacteriologic cures were treated by the intramuscular route alone and

TABLE 4.—*Data in 17 Fatal Cases of Hemophilus Influenzae Meningitis*

Case No.	Age	Day of Illness on Which Treatment Started	Previous Treatment	Other Treatment	Cerebrospinal Fluid Cultures: Before Treatment	Cerebrospinal Fluid Cultures: After Treatment *	Day of Death During Treatment	Routes of Injection	Comment
1	3 mos.	7	Sulfonamides and serum	.....	+	..	4	Intramuscular	Patient died with an intractable ileus; cerebrospinal fluid was negative from first treatment day on
2	6 mos.	25	Sulfonamides and penicillin	.....	+	..	8	Intramuscular, intrathecal	Spinal block developed before streptomycin was started; patient died from hydrocephalus
3	17 mos.	27	Sulfonamides and penicillin	Sulfonamides, serum and heparin	+	?	8	Intramuscular, intrathecal	
4	2½ yrs.	8	Sulfonamides and penicillin	.....	+	?	16 days after treatment	Subcutaneous	
5	2½ yrs.	2	.....	Serum	+	?	1	Intramuscular intrathecal	Died 5 hours after streptomycin was started
6	?	5	Penicillin	.....	+	?	3	Intramuscular, intrathecal	
7	2 yrs.	22	Sulfonamides, penicillin and serum	Sulfonamides	+	?	3	Intramuscular	
8	4 mos.	49	Sulfonamides, penicillin and serum	.....	+	?	4 days after treatment	Intramuscular, intrathecal	Spinal block developed during treatment
9	1 yr.	?	Sulfonamides and penicillin	Sulfonamides, penicillin and serum	+	?	5	Intramuscular, intrathecal	
10	6 mos.	37	Sulfonamides, penicillin and serum	.....	..	+	7	Intramuscular, intrathecal	Spinal block developed before streptomycin was started; cultures negative during treatment but positive at autopsy
11	18 mos.	23	Sulfonamides	Sulfonamides serum	+	+	3	Intramuscular, intrathecal	Cerebrospinal fluid negative first treatment day only; autopsy showed thick green exudate on meninges; organism developed 16 times greater resistance during treatment
12	1 yr.	3	.....	.....	+	+	2	Intramuscular, intrathecal	Autopsy showed fresh subarachnoid hemorrhage, also thick exudate on meninges
13	8 mos.	23	Sulfonamides, penicillin and serum	.....	+	..	13	Intramuscular, intrathecal	Autopsy showed little exudate; death probably related to severe cerebral edema
14	6 mos.	11	Sulfonamides and penicillin	.....	+	?	5	Intramuscular, intracisternal	
15	8 mos.	4	Sulfonamides and penicillin	.....	+	?	3	Intramuscular, intrathecal	
16	28 yrs.	4	Sulfonamides, penicillin and serum	Sulfonamides and penicillin	+	?	5	Intramuscular, intrathecal	
17	2 yrs.	6	Sulfonamides, penicillin and serum	Sulfonamides	+	+	8	Intramuscular, intrathecal	

* The interrogation point means Not specified.

9. All cases should be studied carefully in order to define the nature of the infection, the sensitivity of the organisms and the nature of the underlying anatomic lesion.

HEMOPHILUS INFLUENZAE MENINGITIS

There were 100 cases of Hemophilus influenzae meningitis reported. Of these, 66 were cured clinically and bacteriologically while under treatment, 13 improved under treatment and finally recovered, 1 improved but relapsed, 3 showed no effect and 17 patients died.

Eighteen of the 66 patients who recovered received no treatment other than streptomycin at any time. Forty-eight patients had received previous treatment, and 32 were given concurrent therapy with penicillin, sulfonamides and serum in various combinations.

2 were treated by the intrathecal route alone; all the others were treated both intramuscularly and intrathecally. With the exception of 2 cases, the combined intramuscular and intrathecal administration was also used in the cases in which treatment failed. In 1 of these 2 failures streptomycin was administered by the subcutaneous route alone; in the other it was given only intramuscularly.

An examination of the 17 patients who died (table 4) disclosed the following points: Sixteen patients were under 3 years of age and 7 were under 1 year. A number of patients were treated late in the course of their disease and after other treatment had failed. Seven were treated for one week or less before streptomycin was started, and the rest for eight to forty-nine days. Death occurred five days or less after strepto-

mycin was started in 11 patients (65 per cent). Two patients received only intramuscular injections.

It thus appears that the factor that is most unfavorable for streptomycin treatment is late treatment after other forms of therapy have failed.

The favorable results reported by Weinstein [6] from the Massachusetts Memorial Hospitals suggest that early diagnosis and prompt intramuscular and intrathecal injection of streptomycin are usually followed by striking improvement. A feature stressed by Weinstein is the occurrence of superinfections due to other organisms, such as staphylococci that are resistant to streptomycin but sensitive to penicillin. These observations direct attention to the importance of bacteriologic studies in all cases.

BACTEREMIA

The causes of the 91 cases of bacteremia are listed in table 3. Forty-nine patients recovered and 12 improved. In 4 there was no appreciable effect although the patients survived. Twenty-six patients died.

TABLE 5.—*Results in Pulmonary Infections*

Infecting Organism	Number of Patients	Results: Recovered or Improved	Results: No Effect	Results: Died
Friedländer's bacillus	12	8	1	3
Friedländer's bacillus and Hemophilus influenzae	1	1	..	..
Friedländer's bacillus, H. influenzae and staphylococcus	1	..	..	1
Friedländer's bacillus and streptococcus	1	1	..	..
Friedländer's bacillus and gram-negative and gram-positive organisms	2	..	2	..
Escherichia coli	2	1	..	1
E. coli and Proteus vulgaris	1	1	..	..
E. coli and streptococcus	1	1	..	..
E. coli, staphylococcus and streptococcus	1	1	..	..
E. coli, Pseudomonas aeruginosa and streptococcus	1	1	..	..
Ps. aeruginosa	1	1	..	..
Ps. aeruginosa and staphylococcus	1	1	..	..
Gram-negative bacilli ?	4	3	1	..
Gram-negative bacilli and streptococcus	1	..	1	..
Gram-negative and gram-positive bacilli	1	1	..	..
H. influenzae	4	2	..	2
H. influenzae and H. pertussis	1	..	..	1
H. influenzae and pneumococcus	1	1	..	..
H. influenzae and streptococcus	1	1	..	..
H. influenzae and gram-positive organism	1	..	1	..
Staphylococcus	2	1	1	..
Streptococcus	1	1	..	..
Etiology doubtful	1	1	..	..
Pneumococcus	1	1	..	..
Totals	44	29	7	8

The average daily dose was 2 Gm. per day and the average duration of treatment twelve days. All the patients who recovered were treated by the intramuscular route alone. Two of the patients whose condition improved received streptomycin by the intravenous route, and 1 was treated subcutaneously.

Of the patients who died, all were gravely ill when treatment was started and death occurred between the first and fifth days of treatment.

Only 2 of the patients who recovered received concomitant specific treatment; in both of these, penicillin and sulfonamides were given concurrently.

Comment.—In this group it was apparent that streptomycin was important in controlling the infections and aided in reducing the fatality rate. Many of the gram-negative bacteria invaded the blood from the genitourinary tract, and streptomycin assisted in clearing the blood of bacteria as well as in controlling the local infection. It is widely recognized that the prognosis in these cases is determined to some extent by the nature and severity of the local lesions from which invasion of the blood stream occurs. Many factors such as the age of the patient, the site and extent of the initial lesion, the species of infecting organism, the presence of complicating and debilitating diseases and the duration of the infection must be taken into account in assessing the results of treatment with streptomycin.

TULAREMIA

There were 67 cases of tularemia reported, with 63 recoveries. The results were striking and immediate in 55 and gradual but permanent in 8. In 3 cases no effect was observed, but in 2 of these the diagnosis was questionable and the total dose was less than 3 Gm. In all 3 treatment was begun over two months after the onset of symptoms. In 2 cases relapse occurred after treatment was stopped, but both patients recovered after a second course of streptomycin.

Nearly every patient was treated with 1 Gm. per day for an average of seven days. A few patients recovered with as little as 0.75 Gm. per day for six days.

Eleven of the patients had had pleural and pulmonary forms of tularemia. Nine recovered, 1 improved, and 1 died on the first day of treatment.

The majority of cases had been treated previously with sulfonamides and penicillin. Only 2 of the patients who recovered received concurrent treatment: 1 was treated with sulfonamides and the other with serum.

Comment.—These results confirm and extend the observations of Heilman,[7] Pasternack and Foshay,[8] Cohen and Lasser,[9] and Abel.[10] It can be stated with confidence that streptomycin is an extremely effective agent in tularemia and that it is by far the best therapeutic agent available for the treatment of this disease. Early diagnosis and treatment by intramuscular injection for five to seven days with an average amount of 1 Gm. daily should be used in all patients. In the pulmonary and pleural forms of the disease, as well as in the forms with continuous fever without localizing signs, it is desirable to give 2 Gm. daily for seven days or longer until the disease is under control.

PULMONARY INFECTIONS

Forty-four patients with acute or chronic pulmonary infection due to a variety of organisms were treated (table 5). Fifteen recovered, 18 improved and 11 showed no effect. Of the patients who improved, 2 relapsed after treatment and 4 died.

Seventeen cases were infections with Friedländer's bacillus. Six patients recovered, 3 improved permanently, 3 improved temporarily, 3 showed no effect and 1 died.

There were 4 cases due to infection with Hemophilus influenzae; 3 patients recovered and 1 died. Two cases were due to staphylococcic infections; 1 improved and the other showed no improvement. Two others were due to pure gram-positive infections, one a streptococcic pneumonia and the other a pneumococcic pneumonia. Both patients were cured. The remainder of the cases were mixed gram-negative or gram-positive and gram-negative infections.

6. Weinstein, L.: Treatment of Meningitis Due to Hemophilus Influenzae with Streptomycin: A Report of 9 Cases, New England J. Med. **235**: 101 (July 25) 1946.

7. Heilman, F. R.: Streptomycin in the Treatment of Experimental Tularemia, Proc. Staff Meet., Mayo Clin. **19**: 553-559 (Nov. 29) 1944.

8. Foshay, L., and Pasternack, A. B.: Streptomycin for Tularemia, J. A. M. A. **130**: 393-398 (Feb. 16) 1946.

9. Cohen, R. B., and Lasser, R.: Primary Tularemic Pneumonia Treated with Streptomycin, J. A. M. A. **131**: 1126-1127 (Aug. 3) 1946.

10. Abel, O.: The Use of Streptomycin in Tularemia, J. Missouri M. A. **43**: 167-169 (March) 1946.

The patients who recovered were treated with an average of 1.5 Gm. of streptomycin per day for seven days.

Twenty per cent of the patients who recovered were ill for more than one month before treatment with streptomycin was begun, while 50 per cent of those who improved and 45 per cent of those who showed no effect had been infected for comparable periods before treatment was started.

Previous treatment with sulfonamides and penicillin was about equally divided between the patients that recovered and those that showed no effect. None of the patients who recovered received any concurrent chemotherapy.

The intramuscular route of administration was used in the majority of cases, but in 3 cases the aerosol method was employed; 2 of these patients improved and 1 died. The latter method was not used alone, since the drug was given intramuscularly in 2 cases and intravenously in the third.

Comment.—As primary infections of the lungs due to gram-negative bacilli are infrequent, it is difficult in any case to assess in a precise manner the therapeutic effect of streptomycin. In the case of acute infections due to Friedländer's bacillus there is suggestive evidence that streptomycin is extremely effective when treatment is started early. When the infection has become established and there are signs of necrosis and destruction of pulmonary tissues the results are likely to be of a transitory nature, and permanent benefits are less frequent.

Certain features are worthy of comment in this group of infections. It is not uncommon to observe a complete change in the bacteriologic flora of the sputum of patients with pulmonary infections who have been treated with penicillin. The gram-positive organisms commonly disappear or become less numerous, and gram-negative organisms appear in large number. It is obviously very difficult to decide how important gram-negative bacilli are in the sputum of a patient who has been treated with pencillin. A more extensive investigation of these mixed infections of the lungs is necessary before any decision can be reached concerning the importance of streptomycin either in influencing the course of the disease or in effecting recovery.

It will also be important in the future to study further the local effects of streptomycin in chronic pulmonary infections such as bronchiectasis when streptomycin is used by the aerosol method.[11]

BRUCELLOSIS

So far, 45 cases of brucellosis have been reported. Thirty of these patients showed a decrease in the fever while under treatment, and 15 showed no effect on the course of the disease while receiving streptomycin. Of the 30 patients with a decrease in fever, 29 have been followed for three to eight weeks and there have been two relapses. The average dose in 25 cases was 3 or 4 Gm. a day for five to sixteen days. Five patients received less than 3 Gm. a day. Of the 15 patients who showed no improvement, 10 received only 2 Gm. a day and the remaining 5 received 3 to 4 Gm.

Judging from the cases studied so far, it can be said that no dramatic effects were observed on the course of acute brucellosis.[12] The patients have been followed for an insufficient period of time to determine the effect of streptomycin on the relapse rate. From these studies it appears that the minimum dose in these patients should be at least 4 Gm. a day for fourteen to twenty-one days. It will be of interest in the future to ascertain whether treatment in the early course of the disease will reduce the relapse rate and shorten the total duration of the disease.

It is a matter of common knowledge that brucellosis is a disease with an extremely variable course, with relapses and remission occurring at varying intervals over a period of some months and at times several years. It is admitted by most physicians that the diagnosis of chronic undulant fever is difficult, especially when the only criteria for diagnosis are positive skin tests or positive agglutination tests of low titer. It is known from surveys of normal medical students and others without any complaints that at least 15 per cent of all persons will show positive skin reactions to brucellin and that about the same number will show a positive agglutination test. As the supplies of streptomycin were limited, it was decided by the Committee to make the initial studies only in cases in which the organisms were isolated from the circulating blood. In this way the effect of streptomycin on the bacteremia and the course of the fever could be followed in patients with a proved infection.

TYPHOID

Fifty-one patients with typhoid were studied. Twenty-six were started on treatment before the eighteenth day of illness, and 18 of these had normal temperature before the twenty-eighth day of illness. In the other 8 cases the temperature became normal between the twenty-ninth and the fifty-sixth day of illness. In 1 case treatment was started on the eighth day of illness and the temperature was normal by the twelfth day. The blood culture became negative during treatment, but the stools remained positive and were still positive one month later.

In the remaining 25 cases, treatment was started after the eighteenth day of illness and the temperature did not become normal until after the twenty-eighth day.

One patient had a sister who contracted typhoid simultaneously. Treatment was begun on the fourteenth day and the temperature was normal by the twenty-fourth day. The untreated sister exhibited an identical clinical course.

The dosage varied between 1 and 5 Gm. a day for periods of five to nineteen days. The majority of patients received 4 Gm. a day for seven or eight days. Fifteen patients received streptomycin both orally and intramuscularly. The combined therapy was no better than intramuscular treatment alone.

An insufficient number of patients have been treated to determine whether the fatality rate can be reduced by the use of streptomyein. Also it will be important in the future to determine whether starting treatment early—that is, within the first seven days of the illness—

11. Olsen, A. M.: Streptomycin Aerosol in the Treatment of Chronic Bronchiectasis: Preliminary Report, Proc. Staff Meet., Mayo Clin. **21:** 53-54 (Feb. 6) 1946.

12. Herrell, W. E., and Nichols, D. R.: The Clinical Use of Streptomycin: A Study of 45 Cases, Proc. Staff Meet., Mayo Clin. **20:** 449-462 (Nov. 28) 1945. Reimann, H. A.; Price, A. H., and Elias, W. F.: Streptomycin for Certain Systemic Infections and Its Effect on the Urinary and Fecal Flora, Arch. Int. Med. **76:** 269-277 (Nov.-Dec.) 1945.

shortens the duration of the disease. It is fair to say, however, that a study of these cases and others yields no evidence that streptomycin given in doses of 4 Gm. a day has shortened the course of typhoid.[13]

SALMONELLA INFECTIONS

Twenty-six patients have been treated for Salmonella infections. Ten recovered under treatment, 2 showed improvement and recovered later, 6 showed no improvement and 8 died. Two of the patients who died showed temporary improvement under treatment and died later. Bacteremia was present in 14 patients. The average dose of streptomycin was 3 Gm. for seven days. In 13 patients treatment was started on the third to the sixth day of the illness and in the remainder from the seventh to the twenty-eighth day. In only 1 patient who recovered under treatment was streptomycin started after the eighth day of illness.

Table 6.—*Results in Peritonitis*

Causes	Number of Patients	Results: Recovered	No Effect	Died
Appendicitis	21	18	..	3
Postoperative	9	6	..	3
Diverticulitis of colon	7	3	2	2
Perforative peptic ulcer	4	3	..	1
Intussusception	2	1	..	1
Cancer of colon	1	1	..	..
Salpingitis	1	..	..	1
Infective abortion	1	1	..	..
Not specified	7	6	..	1
Totals	53	39	2	12

Nineteen patients had enteric involvement alone. Eight of these recovered, 7 showed no effect and 5 died. One of the deaths occurred four weeks after treatment was completed and followed mesenteric thrombosis.

Five of the patients with enteric infections had bacteremia when streptomycin treatment was begun. In 3 the blood was cleared of bacteria during treatment and the patients recovered. In 2 the cultures remained positive and the patients died.

One patient had been ill with a Salmonella enteric infection for one month and was comatose when streptomycin treatment was started. This patient died on the third day of streptomycin therapy, and autopsy showed a complicating encephalitis.

Table 7.—*Results in Meningitis Due to Gram-Negative Organisms Other than Hemophilus Influenzae*

Causative Organism	Total	Recovered	Improved	Died
Alkaligenes fecalis	4	1	3	..
Escherichia coli	3	1	2	..
Proteus vulgaris	2	1	..	1
Klebsiella pneumoniae	2	..	..	2
Proteus morganii	1	1	..	..
Gram-negative bacilli unidentified	2	1	..	1
Totals	14	5	5	4

There were 3 patients with involvement of the lungs. Two of these had positive blood cultures when treatment was started; 1 recovered and the other died. The third patient had negative blood cultures when treatment was begun and showed clinical improvement with streptomycin.

There were 2 cases of Salmonella meningitis. One patient recovered under treatment; the other showed improvement but died from hydrocephalus secondary to the infection.

One patient had ulcerative colitis with a superimposed Salmonella infection. This patient received three courses of streptomycin and showed clinical improvement each time. The relief of symptoms was temporary.

Comment.—In this small group of cases it can be said that the fatality rate was high even when streptomycin was started soon after the infection was recognized. The various strains of Salmonella organisms vary greatly in their susceptibility to streptomycin, and this may account in part for the poor results. Other factors to be taken into account are the localization of the infection and other diseases in the host.

In view of the high fatality rate in these cases, it is recommended that maximum doses of streptomycin be used early and continued for at least fourteen days.

Table 8.—*Results in Miscellaneous Conditions*

Condition	Number of Patients	Results: Prophylaxis Effective	Improved	No Effect
Amebic hepatitis	1	..	..	1
Atrophic rhinitis	1	..	..	1
Brain abscess	1	..	1	..
Breast abscess	1	..	1	..
Cholangitis or cholecystitis or both	5	..	5	..
Dermatitis repens	1	..	..	1
Draining fistula	5	..	3	2
Empyema	5	..	2	3
Infections of skin and subcutaneous tissues due to susceptible organisms	19	..	11	8
Intra-abdominal abscess	11	..	9	2
Liver abscess	2	..	2	..
Infectious mononucleosis	1	..	1	..
Nonspecific granuloma	1	..	1	..
Operative wound infection	6	..	6	..
Osteomyelitis	8	..	7	1
Otitis media	8	..	7	1
Peritoneal lavage for uremia	1	..	..	1
Prophylaxis	3	3	..	..
Puerperal sepsis	1	..	..	1
Pylephlebitis	1	..	1	..
Reiter's syndrome	1	..	..	1
Rheumatoid arthritis	6	..	..	6
Typhus	2	..	..	2
Ulcerative colitis	7	..	..	7
Totals	98	3	57	38

PERITONITIS

There were 53 patients with peritonitis. Thirty-nine recovered and 12 died. The etiology is shown in table 6.

It will be generally admitted that it is exceedingly difficult to evaluate the precise role of any form of chemotherapy in the treatment of peritonitis for the reason that there are so many variables concerned in the recovery of this type of infection. It is worth notice, however, that there were only 3 deaths in 21 patients with peritonitis following appendicitis.

All these patients were treated with intramuscular injections ranging from 1 to 2 Gm. per day for eight to ten days. Twenty-one of the patients who recovered received other forms of chemotherapy at the same time.

The experimental studies of Murphy and Ravdin[14] suggest strongly that streptomycin exerts a favorable effect on the course of peritonitis due to susceptible organisms. These controlled observations, together with the small experience reported to us, are sufficiently encouraging for streptomycin to be used in all cases of peritonitis in which the infecting organism is a susceptible one.

13. Reimann, H. A.; Elias, W. F., and Price, A. H.: Streptomycin for Typhoid: A Pharmacologic Study, J. A. M. A. **128:** 175-180 (May 19) 1945. Reimann, H. A.; Price, A. H., and Elias, W. F.: Streptomycin in the Treatment of Typhoid Fever, Bull. New York Acad. Med. **21:** 433 (Aug.) 1945.

14. Murphy, J. J., and Ravdin, R. G., quoted by Zintel et al.[1]

As streptomycin diffuses into the peritoneal cavity following intramuscular injection,[4] this is the route of choice; at least 2 Gm. a day should be given for five days or longer. When the infection is a generalized one it may be desirable to inject streptomycin directly into the peritoneal cavity.

MENINGITIS DUE TO GRAM-NEGATIVE ORGANISMS OTHER THAN HEMOPHILUS INFLUENZAE

In the group of cases of meningitis due to gram-negative organisms other than Hemophilus influenzae there were 14 cases (table 7). The organisms causing meningitis included Alkaligenes fecalis, Escherichia coli, Proteus vulgaris, P. morgani, Klebsiella pneumoniae and unidentified gram-negative bacilli. Five patients recovered, 5 improved and 4 died. Two of the patients who improved under treatment relapsed after the drug was stopped; however, both were treated for only two days.

The average dose of streptomycin in this group of patients was 0.5 Gm. a day intramuscularly for nine days and 0.1 Gm. a day intrathecally for six days. In 3 patients who recovered or improved, treatment with sulfonamides, and in 1 case with penicillin as well, was carried out concurrently. In almost all cases penicillin and sulfonamides were used before streptomycin was started.

It is difficult to evaluate the precise role of streptomycin in bringing about recovery in these patients, since the number of cases remains so small. In view of the fact that most of these infections of the meninges are uncommon but have a high fatality rate, all patients should be treated early with streptomycin.

SHIGELLA DYSENTERIES

There were 2 cases in the group of the Shigella dysenteries and both patients recovered. The follow-up period was one month in 1 case and nine days in the other. Treatment was begun in the third month of illness in 1 case and in the fifth month in the other. Both patients had positive stool cultures before treatment and negative cultures after treatment.

Each of these patients received 1.5 Gm. of streptomycin a day intramuscularly for five days. Both had been treated with sulfonamides previously, and neither was treated concurrently with any specific agent.

MISCELLANEOUS CONDITIONS

The results in these cases are shown in table 8. The treatment of these cases was usually in the range of 1 to 2 Gm. per day for five to ten days. (In a few cases the drug was applied topically, but in the majority it was administered by the usual intramuscular route.)

The heterogeneous nature of this group and the small number of each type of case makes it impossible to arrive at any significant conclusions regarding the efficacy of streptomycin in the treatment of most of these conditions. Results were most striking in infections of the middle ear caused by gram-negative organisms. In this group of patients there was immediate recovery in 7 cases, improvement in 1 and no effect in only 1. Streptomycin was also used prophylactically with satisfactory results in 3 cases.[15]

(To be concluded next week)

15. Two of these cases were gunshot wounds of the abdomen with perforation of the bowel. In the third case, streptomycin was used prophylactically for a cholecystostomy. The patient had formerly had a bacteremia due to E. coli, but blood cultures had become sterile on combined sulfonamide-penicillin treatment. Streptomycin was given for three days prior to operation and for two days postoperatively. There were no postoperative complications whatever in a two week follow-up.

FATAL APLASTIC ANEMIA FOLLOWING USE OF TRIDIONE AND A HYDANTOIN

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With the introduction of new drugs there is always the possibility that an occasional patient will manifest an unpredictable toxic reaction. We are reporting a case of fatal aplastic anemia following the use of Tridione (3,5,5-Trimethyloxazolidine-2,4-dione, Abbott) and methylphenylethyl hydantoin.[1] As far as we could determine [2] this is the first instance of any hematologic disturbance from the use of these drugs. There is a strong suggestion that one or the other or both of these drugs was etiologic in the development of the blood disturbance in this patient. For the information of others using these drugs it therefore seems important to publish this. The case report seems especially necessary because Tridione has recently been made available for general prescription use.

REPORT OF CASE

History.—R. S., a white girl aged 16 years, was born at the Bassett Hospital and throughout her life cared for by various members of the staff. She was a twin, but no defect was noted until the age of 13, when the first of a series of grand mal seizures occurred. The initial attack followed a week after a rather insignificant head trauma which had not caused unconsciousness. The patient was hospitalized and routine studies, including neurologic examination, skull x-rays and lumbar puncture, were entirely normal. She was then referred to Dr. William G. Lennox of Boston and an electroencephalogram performed. The case was regarded as one of essential epilepsy and an attempt made to treat her with phenobarbital. Diphenylhydantoin (Dilantin) sodium was added nine months later because of further seizures and the dosage increased along with the use of a ketogenic diet. On Sept. 11, 1945 Tridione was substituted for diphenylhydantoin. She was seen again by Dr. Lennox on October 10, and shortly thereafter methylphenylethyl hydantoin was added. From late October 1945 until her hospital admission both drugs were taken in a dosage of 0.1 Gm. three times daily.

The therapy was successful in controlling the attacks, but during the middle of the winter the patient began to note dyspnea and palpitation on exertion, unusual fatigue and a throbbing sensation in her head. Her menstrual periods changed from a twenty-eight to a twenty-one day cycle and became more profuse. For the last few weeks before admission increasing pallor and a tendency to bruise easily were also noted. She was seen by one of the staff on April 24 and immediately admitted to the hospital.

Physical examination on admission showed normal vital signs. There was decided pallor, with a few petechial hemorrhages and ecchymotic areas in the skin as well as three small necrotic areas in the mouth. Several small posterior cervical lymph nodes were felt. The remainder of the physical examination was negative.

The essential laboratory finding was the evident pancytopenia. On admission the peripheral blood showed a hemoglobin of 7.6 Gm. per hundred cubic centimeters, an erythrocyte count of 3,100,000 and a leukocyte count of 1,000. The differential on the latter showed 5 per cent mature polymorphonuclears,

From the Mary Imogene Bassett Hospital.

1. This is 3-methyl-5,5-phenyl ethyl hydantoin, an anticonvulsant drug manufactured by the Sandoz Chemical Corporation, 68-70 Charlton Street, New York 14, under the name "Mesantoin." It has not as yet been made commercially available.

2. Dr. William G. Lennox was unaware of any similar difficulty encountered in other patients during the course of treatment with these drugs when our patient first became ill. He has later informed us that Dr. R. P. MacKay of Chicago had a patient who showed similar manifestations and likewise died shortly after our patient.

89 per cent lymphocytes, 5 per cent monocytes and 1 per cent eosinophils. The red cells showed variation in size and shape, with pale centers. One nucleated red cell was seen on this examination but none were encountered later. Platelets were rare on the stained film, and a platelet count (Rees-Ecker method) was 42,000. The bleeding time on admission was well over fifteen minutes, and the capillary clotting time with Standard Corning glass capillary tubes was ten minutes. The erythrocyte sedimentation rate (Wintrobe) was 56 mm. per hour, the hematocrit was 25 per cent and the corrected rate 22 mm. per hour. The mean corpuscular volume was 80.6 cubic microns, the mean corpuscular hemoglobin 24.5 micromicrograms and the mean corpuscular concentration 30.4 per cent.

Hospital Course.—The essentials of the patient's course are outlined in the accompanying chart. Anticonvulsant drugs other than phenobarbital were stopped. Strict isolation technic was instituted together with penicillin, but in spite of these measures the temperature rose in steplike progression throughout the first week. The cause of this bout of fever was never clear. Its subsidence corresponded with the use of streptomycin and the temporary suspension of transfusions. There was never any evidence that transfusion was of benefit other than to raise very transiently the levels of hemoglobin and red blood cells. None of the agents used in an effort to stimulate hematopoiesis (pentnucleotide, crude liver extract, folic acid [3]) proved of any avail. On only two occasions were any reticulocytes seen, and then only in a frequency of 0.1 and 0.2 per cent. It may be of some interest that the latter value came shortly after transfusions had been suspended for seven days.

The therapy in this case was immeasurably complicated by menorrhagia, which started on the sixth hospital day. Bleeding was persistent and of sufficient severity to cause a falling hemoglobin in spite of daily transfusions. The patient was followed closely by a qualified gynecologist, who finally resorted to repeated uterine packing and the insertion of radium after all conservative endocrine measures had failed. The uterine packing temporarily controlled the bleeding, but it must be assumed that this led to the infection which terminated the picture on the thirty-eighth hospital day.

Autopsy.—This was performed one and one-half hours post mortem by Dr. Darrell Ayer.

The diagnosis was aplastic anemia; bronchopneumonia, interstitial, bilateral; necrosis of endometrium; salpingitis, subacute; peritoneal abscesses, pelvic; ecchymoses, renal pelvis, bladder, lungs and skin.

Grossly there was a small abscess between the fimbriated extremity of each oviduct, its neighboring ovary and the adjacent rectum, each containing less than 1 cc. of thick yellow material. There was also purulent material within the lumen of each oviduct and necrotic sequestration of the lining throughout the uterine cavity.

Bone marrow was obtained from the sternum, rib, vertebra and midfemur. The rib was devoid of marrow and had the appearance of a dried honeycomb. There was only the barest suggestion of hemopoietic tissue in the fat of the sternum and midfemur, but marrow from the first lumbar vertebra showed cellularity and redness estimated to represent about 50 per cent of that seen normally.

TABLE 1.—*Summary of Observations of Patient with Aplastic Anemia*

Date	Hemoglobin, Gm. per 100 Cc.	Erythrocytes, Millions	Leukocytes	Polymorphonuclears, per Cent	Platelets, Thousands	Reticulocytes, per Cent	Whole Blood, Cc.	Pentnucleotide, Cc.	Crude Liver, Units	Folic Acid, Gm.	Penicillin in 1,000 Units Daily	Streptomycin, 100,000 Units Daily	Sulfadiazine, Gm.	
4/24	7.6	3.1	1,000	5	42	...	500	..	..	0.030	160	..	..	
25	....	....	.....	..	..	...	500	..	..	.....	160	..	..	
26	10.3	....	1,000	8	..	...	350	30	2	.....	160	..	..	
27	....	....	.....	..	..	...	500	40	2	.....	260	..	..	
28	12.9	....	1,100	9	..	...	500	40	2	.....	320	..	..	
29	13.6	4.99	1,000	2	12	...	500	40	2	.....	...	..	..	
30	....	....	.....	..	..	...	500	40	2	.....	...	12	..	
5/1	16.6	5.88	1,100	1	36	0.1	...	40	2	.....	...	24	..	
2	15.4	5.70	1,025	4	30	...	...	20	2	.....	...	24	..	Blood culture negative
3	15.0	5.25	1,150	2	20	...	...	..	..	0.030	...	24	..	
4	14.9	5.04	1,500	5	46	0.0	...	..	..	0.015	...	24	..	
5	....	....	.....	..	..	...	...	..	..	0.015	...	24	..	
6	13.5	4.90	1,275	8	38	0.0	...	..	..	0.015	...	24	..	
7	....	....	.....	..	..	...	...	..	..	0.015	300	9	..	Sternal biopsy
8	12.7	4.45	1,250	8	28	...	...	..	..	0.015	480	..	..	
9	11.5	4.09	875	8	24	...	500	..	..	0.015	480	..	..	
10	8.3	2.91	1,200	4	28	...	500	..	..	0.015	480	..	..	
11	7.1	....	1,000	8	..	...	500	..	..	0.015	480	..	..	
12	9.2	2.90	1,275	5	36	0.2	500	..	..	0.015	480	..	..	
13	6.8	....	975	8	..	...	500	..	..	0.015	480	..	..	
14	....	....	.....	..	..	...	500	..	..	0.015	480	..	..	
15	7.3	2.50	675	5	48	...	500	..	..	0.015	480	..	..	
16	8.2	....	825	8	..	0.0	500	..	..	.....	480	..	..	
17	9.1	....	675	8	..	...	500	..	..	.....	480	..	..	
18	10.5	3.62	775	16	..	...	500	..	..	.....	480	..	..	
19	9.3	3.00	.....	..	..	...	500	..	..	.....	480	..	..	
20	9.2	3.00	650	16	40	0.0	500	..	..	.....	480	..	..	Blood culture positive
21	9.2	....	325	16	..	...	500	..	..	.....	480	..	3	B. coli
22	10.1	3.56	550	10	20	...	...	..	..	.....	480	..	6	
23	10.6	....	725	11	..	0.0	500	..	..	.....	480	..	3	
24	9.7	3.40	600	12	..	...	500	..	..	.....	480	..	..	Blood culture positive
25	10.6	....	400	6	..	...	500	..	..	.....	480	..	..	B. coli
26	....	....	.....	..	..	0.0	...	..	..	.....	480	12	..	
27	8.6	2.76	575	4	28	...	500	..	..	.....	480	60	..	
28	7.8	....	325	10	..	...	500	..	..	.....	480	63	..	
29	8.3	2.90	450	14	18	...	500	..	..	.....	480	48	..	
30	....	....	.....	..	..	...	...	..	..	.....	480	48	..	
31	....	....	.....	..	..	...	...	..	..	.....	120	12	..	Patient died 8 a. m.

TABLE 2.—*Count of Three Hundred Cells*

	Per Cent
Blast cells	0.3
Promyelocytes	0.7
Myelocytes:	
Neutrophilic	1.7
Basophilic	0.3
Eosinophilic	0.3
Metamyelocytes:	
Neutrophilic	0.7
Lymphocytes	96.0
Erythrocytes:	
Precursors	0

Microscopically there was massive old and recent hemorrhage into the alveoli. The alveolar walls were thickened and infiltrated with lymphocytes and monocytes. The septums were edematous, and there was proliferation of connective tissue.

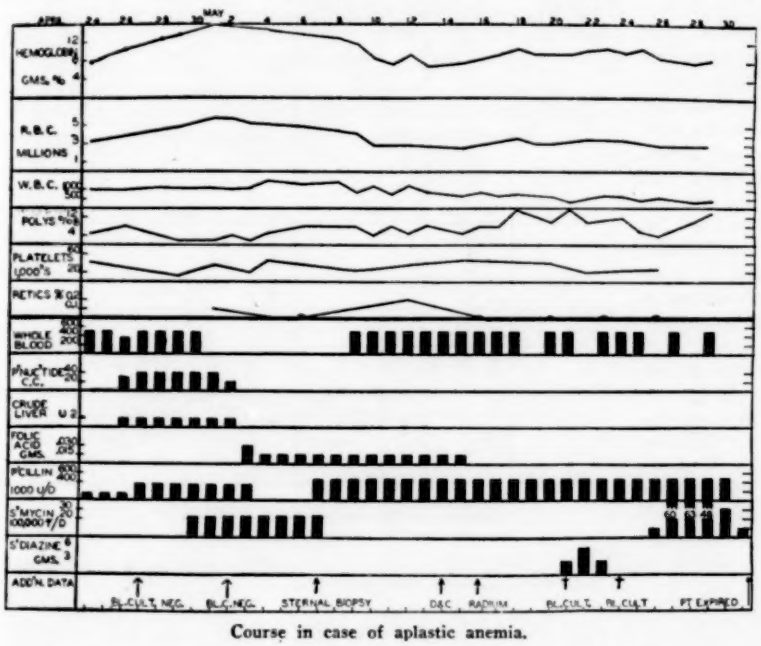
3. Folic acid was obtained through the courtesy of Dr. E. L. R. Stokstad of Lederle Laboratories.

Bone Marrow: The blocks from the sternum and femur consisted principally of fat, reticulum cells and foci of lymphocytes. Rare unidentified blast cells were occasionally encountered. On the other hand the vertebral marrow showed slight hemopoiesis in both series but no megakaryocytes are encountered. It is estimated that about one fourth the normal amount of hemopoietic tissue was present. It should be noted that lymphocytes formed a conspicuous component of the hemopoietic foci. Numerous differential counts on touch preparations on sternal marrow taken by biopsy during life and of postmortem material were done by one of us (R. D. J.). A typical differential on one of these from the vertebral marrow obtained at autopsy is given in table 2.

Lymph Nodes: The general structure was maintained, but the germinal centers were small. Occasional blast cells in the lymphoid cords gave evidence of extramedullary hemopoiesis.

Spleen: There was evidence of recent hemorrhage into the pulp, and hemosiderin was present, both free and in macrophages. In ill defined areas there was cellular fibrosis. There were occasional blast cells in the pulp.

Uterus: There was coagulation necrosis of the endometrial surface, with myriads of bacteria lying in the innermost portion. There was no cellular reaction on the part of the tissues.



Course in case of aplastic anemia.

Oviducts: In each oviduct there was acidophilic necrotic material in the lumens. There was an infiltrate characterized by lymphocytes and proliferating connective tissue.

Cultures: Postmortem lung culture showed no growth. Postmortem heart blood culture revealed Proteus ammoniae, alpha group streptococci and coliform bacilli. Postmortem cultures of the left oviduct yielded coliform bacilli and Proteus ammoniae (the coliform bacilli were of the intermediate type, i. e. they did not belong to the Escherichia coli group or to the Aerobacter aerogenes group.

SUMMARY

A girl aged 16 died from aplastic anemia after having taken Tridione and methylphenylethyl hydantoin concurrently for a period of six months. All the measures used to prevent and treat infection, stimulate hemopoiesis and arrest bleeding proved of no value.

CONCLUSIONS

Tridione and methylphenylethyl hydantoin, although not proved etiologic agents in this case, must be viewed with suspicion as possible bone marrow depressants until a sufficient body of data on their use has been accumulated.

APLASTIC ANEMIA AND AGRANULOCYTOSIS FOLLOWING TRIDIONE

A Fatal Case

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Recently Tridione (3,5,5-Trimethyloxazolidine-2-4-dione, Abbott) has been introduced as an effective anticonvulsant, of particular value in the control of petit mal and psychomotor seizures. Several closely similar compounds were studied in 1938 by Erlenmeyer for their narcotic effects, which were found to be slight.[1] Tridione itself was synthesized by Spielman,[2] and was subsequently reported to have anticonvulsant properties when given to mice, guinea pigs, cats and rabbits.[3] During and since 1945 many physicians have used it for the treatment of convulsive disorders in the human being, and a few reports have appeared regarding its effects. In general, it has been found of value in the control of petit mal and even of psychomotor attacks, while its toxic manifestations have been very few and relatively unimportant. Richards and Perlstein[4] reported "no side effects." Lennox[5] mentioned skin rashes and sensitivity of the eyes to light—the latter chiefly in adolescents and adults and not accompanied with impairment of visual acuity in dim light. This blurring of vision in bright light (hemeralopia) has been reported by relatively all who have prescribed the drug. DeJong[6] found that Tridione produced nausea and skin eruptions in some patients and drew further attention to the photosensitivity and disturbance of color vision. He also reported lightheadedness and drowsiness in some patients.

During 1945 and 1946 one of us (R. P. M.) has treated some 30 patients with Tridione. In general, petit mal has been favorably influenced, most dramatically in children. Our results in psychomotor attacks and in petit mal in adults have been less striking. Patients having both grand and petit mal seizures often exhibited exaggeration of the grand mal as the petit mal decreased. We commonly observed hemeralopia in adolescents and adults but very rarely in children. It was never very troublesome. Unfortunately, fatal aplastic anemia, agranulocytosis and thrombocytopenia occurred in the following case.

REPORT OF CASE

History.—R. J. R., an unmarried woman aged 23, consulted one of us (R. P. M.) first on Aug. 16, 1945 complaining of petit mal seizures with psychomotor automatisms since the

From the Department of Neurology and Neurological Surgery, University of Illinois College of Medicine, and St. Luke's Hospital.

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4. Richards, R. K., and Perlstein, M. A.: Tridione: A New Experimental Drug for Treatment of Convulsive and Related Disorders, Arch. Neurol. & Psychiat. **55**: 164 (Feb.) 1946.
5. Lennox, William G.: The Petit Mal Epilepsies: Their Treatment with Tridione, J. A. M. A. **129**: 1069 (Dec. 15) 1945.
6. DeJong, Russell N.: Effect of Tridione in the Control of Psychomotor Attacks, J. A. M. A. **130**: 565 (March 2) 1946.

age of 5. Both parents and a brother, aged 28, were in good health. She had seemed normal after an uneventful delivery and had developed satisfactorily until the age of 3, when she fell from a moving taxicab, sustaining a basal skull fracture. She had repeated major convulsive seizures for twelve hours and remained unconscious for twenty-four hours. During the next year she had frequent "night terrors" but remained otherwise normal until, when 5, she began to have petit mal seizures. In these she would "stare into space," turn her head upward and to one side and appear to grope

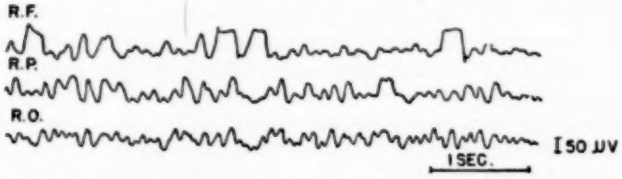


Fig. 1.—Electroencephalogram taken in May 1936. The patient had been under medication with phenobarbital until two weeks prior to the tracing.

for something. Such attacks occurred five or six times daily but were considerably diminished for a few weeks under treatment with phenobarbital.

Thereafter she continued to have these attacks, which were often followed by inappropriate and sometimes violent acts, such as walking aimlessly or brushing food and dishes off the table. Once she put both hands into the gravy bowl. She had been treated unsuccessfully by numerous competent physicians with ketogenic diet, phenobarbital (which she had received almost constantly since the onset of her seizures), bromides and diphenylhydantoin sodium. To the diphenylhydantoin she had responded with urticaria. A pneumoencephalogram by Dr. Loyal Davis in May 1936 was normal, and an electroencephalogram in June 1945 by Dr. Harold C. Voris showed "a great deal of 3 to 8 per second rhythm with frequent spikes or abortive spikes." This dysrhythmia was diffuse and not paroxysmal (fig. 1).

When seen in August 1945 she was objectively normal neurologically. She was taking 4 grains (0.25 Gm.) of phenobarbital daily but was having petit mal and psychomotor seizures between once a week and four times daily. Tridione 0.3 Gm. thrice daily was added to this medication. A month later no benefits had been noted and the dosage of Tridione was increased to five times daily. This produced hemeralopia but no other toxic manifestations, and her seizures were reduced in frequency to less than once a week and in severity so as to be scarcely detectable.

TABLE 1.—*Studies on the Blood*

	Hemoglobin, Gm. per 100 Cc.	Red Blood Cells, Millions	White Blood Cells	Platelets	Polymorphonuclears, per Cent	Lymphocytes, per Cent	Monocytes, per Cent	Band Cells, per Cent	Reticulocytes, per Cent	Nucleated Red Blood Cells
June 21	4.8	1.55	4,250	17,050	15	79	1	5	..	..
23	4.8	2.04	1,950	.....	..	..	..	..	..	..
24	5.2	1.63	2,050	.....	14	77	8	1	..	..
25	5.8	1.90	2,550	.....	12	80	4	4	..	..
26	5.8	1.72	2,900	24,080	6	90	2	2	0.5	..
27	5.8	2.05	2,850	.....	19	73	5	3	..	..
28	5.4	1.97	3,000	15,760	..	96	4	..	0.3	1
29	4.5	1.60	2,850	.....	3	97	..	..	..	..
July 1	3.6	1.13	1,100	.....	3	95	2	..	0.1	4

Symptoms first appeared on June 15 and patient died on July 2.

The medication was varied slightly from time to time, partly because of the hemeralopia when snow was on the ground. On May 15, 1946 it was reduced from six to four daily doses each of Tridione 0.3 Gm. and phenobarbital 1 grain (60 mg.). At that time she was also disturbed by emotional outbursts of alternate rage and guilty penitence, an expression of ambivalence toward her mother, on whom she was extremely dependent when not hostile.

Final Illness.—On June 20 she reported that, five days before, she had begun to have severe headaches, with vomiting, generalized weakness and fatigue. These symptoms had increased progressively, but she had continued to take her medication regularly and had taken no other drugs. Two days previously she had walked several blocks without great difficulty.

On examination she was menstruating. Her skin was waxy and pale, her face puffy. There was a large retinal hemorrhage in the right macula, and several purpuric spots were seen over her body, each 1 to 2 cm. in diameter. The systolic blood pressure was 100 mm. of mercury, the diastolic 60. The urine was tinted with (menstrual ?) blood and contained no sugar and but a trace of albumin. She was granted emergency admission to St. Luke's Hospital on the evening of June 20.

On admission the erythrocyte count was 1,550,000, the hemoglobin 4.8 Gm. per hundred cubic centimeters, the leukocyte count 4,250, of which 79 per cent were lymphocytes, 1 per cent large mononuclears, 15 per cent neutrophils and 5 per cent band shaped cells (table 1). Moderate microcytosis was noted. The platelet count was 17,050, doubly checked. The coagulation time was four minutes and bleeding time indefinitely prolonged. The puncture of the ear lobe made for the blood study continued to bleed for more than an hour. The prothrombin time was

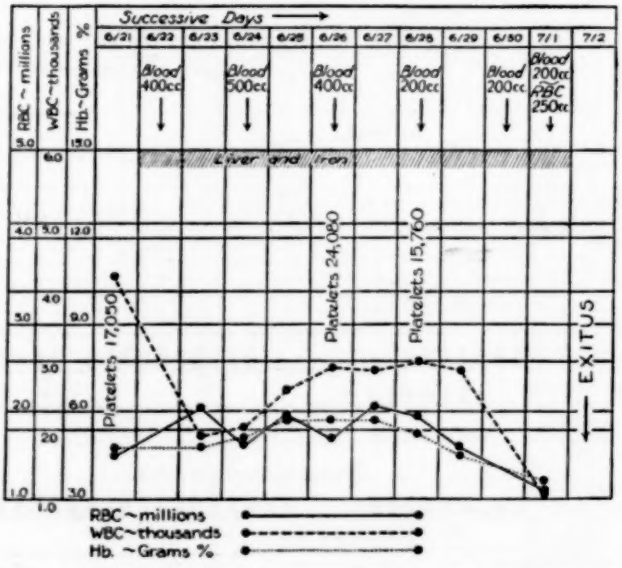


Fig. 2.—Changes in erythrocyte count, leukocyte count and hemoglobin. The values are taken from table 1.

thirty-six seconds, the clotting activity 83.3 per cent. The icterus index was 5 units, and the van den Bergh reaction an indirect positive. Fragility of the erythrocytes against hypotonic saline solution was normal, beginning at 0.46 per cent and being complete at 0.30 per cent. Other laboratory studies on admission revealed blood urea nitrogen 14.0 mg. per hundred cubic centimeters, blood nonprotein nitrogen 27.9 mg. per hundred cubic centimeters, blood chlorides 610 mg. per hundred cubic centimeters, blood carbon dioxide 54.3 volumes per cent and blood sugar 108.7 mg. per hundred cubic centimeters. The blood cholesterol was 134 mg. per hundred cubic centimeters. Serum albumin was 4.79, the serum globulin 0.97. The blood Kahn reaction was negative. The spinal fluid was clear and colorless and under normal pressure, the Pandy test faintly positive, the Wassermann reaction negative, the total protein 10 mg. per hundred cubic centimeters, the cell count 14 leukocytes (lymphocytes 12, polymorphonuclears 2) and 20 erythrocytes per cubic millimeter. The colloidal gold curve was 0111000000.

Treatment and Course (tables 1 and 2, figs. 2 and 3).—The administration of Tridione was discontinued. As anticonvulsants, phenobarbital ¾ grain (50 mg.) and bromides 15 grains (1 Gm.) thrice daily were given. In addition, six liver and iron capsules, Lextron) and 45 cc. of liquid liver extract were injected intramuscularly daily. Beginning June 25 she received 100 mg. of ascorbic acid daily and, after June 26, 10 mg. of folic acid daily.

The patient remained weak but alert. She expectorated large amounts of bloody sputum, and her gums bled almost constantly. Each day a few new purpuric spots were found in her skin. After a few days black, tarry stools appeared.

Early in the morning of June 22 she got out of bed and was caught when about to faint. Administration of penicillin was started in doses of 20,000 units intramuscularly every three hours. Transfusion of fresh whole blood was begun from a donor of the same group (AB), the two bloods being compatible in cross agglutination. However, a febrile reaction to 104.2 F. terminated the injection when she had received only 400 cc. She seemed and felt stronger the next day.

TABLE 2.—*Studies on the Bone Marrow, June 28*

Bone Marrow	Normal (According to Osgood) per Cent	Patient, per Cent
Blast cells	0 - 2.0	0.2
Promyelocytes	0 - 10	0.7
Myelocytes	0 - 10	5.0
Metamyelocytes	1 - 19	11.0
Bands	15 - 35	32.0
Segmenters	7 - 25	17.0
Lymphocytes	4 - 16	5.0
Monocytes	0 - 5	1.0
Eosinophils	0 - 4.6	6.0
Basophils	0 - 1.0	0.0
Megaloblasts	0 - 0.2	0.0
Erythroblasts	4 - 25	22.0
Megalokaryocytes	.....	0.0

She received 500 cc. of fresh whole blood intravenously on June 24 but again her temperature rose to 102.4 F. This febrile reaction continued, both after transfusions and on intervening days, and became more and more severe. The penicillin was increased to 40,000 units every three hours on June 25.

A third infusion was given on June 26 but was stopped at 400 cc. when her temperature reached 106.2 F. Sponges and ice bags were only partly helpful in reducing this fever.

Every subsequent transfusion resulted in a severe febrile reaction, and only 200 cc. could be given on June 28 and on June 30. The sternal bone marrow was examined and found to be essentially normal on June 28 (table 2). Gross hematuria appeared on June 30. On July 1 she received 250 cc. of whole blood and 250 cc. of washed blood cells (from 500 cc. of whole blood). However, she became irrational, developed extreme respiratory distress and was placed in an oxygen tent. Her course ran steadily downward; she became incontinent, her pulse was imperceptible and her temperature mounted ever higher. She died at 11 a. m. July 2, with a temperature of 107.4 F., heart rate of 148 and respiratory rate of 52. She had had petit mal seizures on June 22 and 26 and July 1.

The necropsy revealed extensive hemorrhages throughout the body—in the renal pelves and ureters, beneath the endocardium of the right auricle of the heart, multiple petechial hemorrhages of the epicardium, myocardium, serosa and mucosa of the large and the small bowel, the mucosa of the trachea, the lining of the vena cava and in the skin. There were hemorrhages about the left kidney, in the nose and in the mouth and gums. Gross examination of the brain revealed no large hemorrhages.

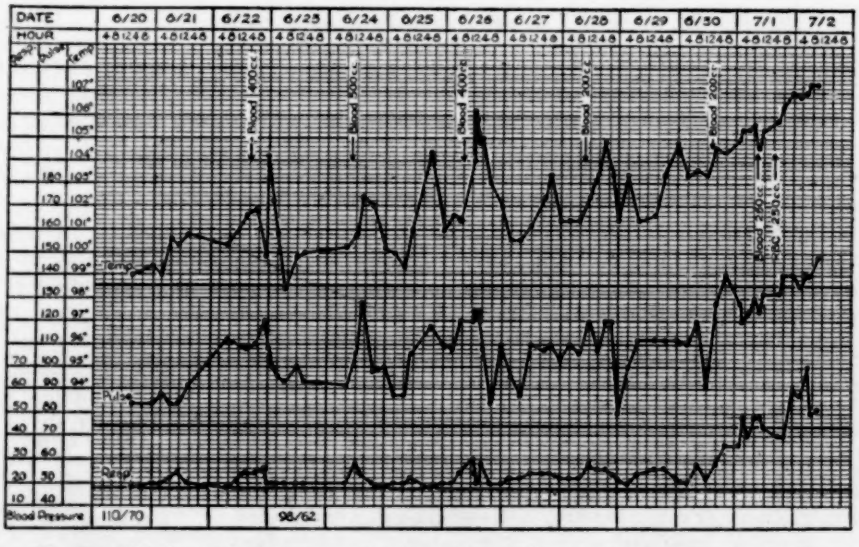


Fig. 3.—Clinical record of temperature, pulse and respiration. Administration of penicillin, not shown on the chart, was continued at 20,000 units every three hours from June 22 through June 24 and at 40,000 units every three hours thereafter.

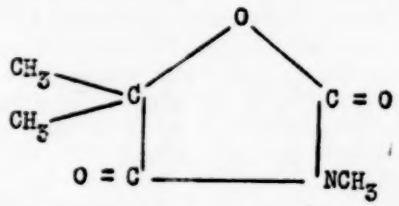
COMMENT

Several features of this case are of interest.

There is little doubt that death was due to Tridione. The role played by drugs in the production of agranulocytosis is well known. The only drugs used by the patient for ten months prior to her death were phenobarbital and Tridione, and she had taken phenobarbital almost constantly for nineteen years without ill effect. The characteristics of her blood during her last illness suggest that she suffered from a profound hemolytic and granulocytolytic process, with almost complete destruction of her blood platelets. A pronounced hemorrhagic tendency resulted. The bone marrow was not affected.

The destruction of the elements of her blood was delayed but abrupt. The acute onset of her illness came only after ten months, but it came suddenly. These facts strongly suggest a progressive accumulation of the drug, or of toxic fractions of it, in the body. As late as two days before her admission to the hospital she walked several blocks without distress. The process was therefore catastrophic and apparently uninfluenced by vigorous treatment.

The mechanism of the destructive action of the drug cannot be stated. It is interesting that its structural formula contains a pentagonal ring, as does aminopyrine, known to be a specific cause of agranulocytosis, and that a carbonyl group is located at the same position in the two. Although aminopyrine differs in other respects from Tridione, it is possible that their cytotoxic effects may be exerted in similar ways. In our case, however, there was obvious destruction of blood cells, both red and white, and not simply an inhibition of erythropoiesis and leukogenesis.



The pentagonal ring of Tridione.

We wish to suggest with comments the following precautionary measures in regard to the use of Tridione:

1. It should not be administered to any patient who has or has had any blood dyscrasia. Contraindications

should specifically include severe anemia of any type, all hemorrhagic tendencies and all previous or present deficiencies of the granulocytic series.

2. Other measures for the control of the convulsive disorders should be used first. Where they succeed, Tridione need not be employed.

3. Tridione should be used in small doses at the start. Our own case lends little support to this precaution in view of the delayed toxic effects of the drug, but it seems reasonable that, with small doses, deleterious effects may be slight and reversible.

4. The blood cells and platelets should be examined frequently in any case in which Tridione is used. The interval should not be less than a month. In women, the time of the menses should be considered as especially dangerous. Patients should be carefully instructed to report for examination at once on the appearance of any unusual symptoms, and this examination should include complete study of the blood.

5. Unprescribed sale of the drug to the public should not be allowed. The present enthusiasm for Tridione, both among the profession and with the public, is very great, because of the glowing accounts which have appeared in the scientific and public press, and even on the radio. The public knows the drug by name and can buy it on the market. A doctor's prescription is recommended on the company's labels and should be required.

6. Finally, further research with Tridione and related substances must be carried out. Slight alterations in the structural formula may be consistent with equal or greater therapeutic efficiency and less hazard. Of especial value would be knowledge of the metabolism of Tridione in the body and a method for measuring its level in the blood, or the level of its disintegration products.

Despite the unfortunate toxic effects of Tridione revealed in this case, the drug offers great promise for effective control of the most stubborn of all convulsive disorders, if its dangers can be avoided. This promise should be fulfilled.

SUMMARY

A woman aged 24 who had taken Tridione (and phenobarbital) for ten months in fairly effective but not unusual doses succumbed to acute aplastic anemia, agranulocytosis and thrombocytopenia only seventeen days after the onset of headache, weakness and fatigue. The clinical course was relentlessly downward. Necropsy revealed extensive hemorrhages throughout the body. Precautionary measures should be taken in the use of Tridione.

Democracy and Science.—A close relation exists between democracy and science. Modern democracy developed with industries—as scientific research and experimenting and inventing produced multitudes of contrivances, as the contrivances brought people together in populous cities and required varieties of skill and intelligence in work on technical procedures. With increasing density of population, points of contact between individuals and groups multiplied and opportunities for concerted thinking and action for common interests greatly increased. The natural results were free popular education, public hospitals, protection of community health and numerous other well known consequences of the democratic process.—Cannon, Walter B.: The Way of an Investigator, New York, W. W. Norton & Co., Inc., 1945.

DEVELOPMENT OF STREPTOMYCIN RESISTANCE DURING TREATMENT

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The early laboratory and clinical experiences with streptomycin have already indicated that the problem of acquired resistance may be of considerably greater importance with this agent than with the sulfonamides or with penicillin.[1] The rapid development of extreme degrees of streptomycin fastness during the course of seemingly adequate treatment in a number of consecutive cases of urinary tract infections caused by a variety of gram-negative bacteria that were initially sensitive to streptomycin has prompted this report.

CASES, MATERIALS AND METHODS

The cases of urinary tract infections selected for therapeutic trial with streptomycin were in persons with chronic pyelonephritis or cystitis due to gram-negative bacilli and preferably uncomplicated by other major pathologic conditions of the genitourinary tract. All had moderate or advanced pyuria and bacilluria which had failed to respond to treatment by the usual methods. Cases of infections associated with a single organism were desired but 2 with multiple infections are included. The organisms isolated from the urine before treatment were sensitive to 25 units or less in most instances. A few other suitable cases of infections due to gram-negative bacilli were also treated.

The gram-negative bacilli obtained from these cases were identified[2] after isolation in pure culture from single colonies. Organisms obtained on separate occasions from the same patient were plated out simultaneously. Pure cultures of the pretreatment strains and some of the later ones were then put through the gamut of tests at the same time in order to be sure that the infecting organisms had remained the same during the period of observation.

The sensitivity of pure cultures of the different strains isolated was tested in broth containing serial dilutions of streptomycin and was taken as the minimum concentration in which there was no visible growth from an inoculum of approximately 50,000 organisms per cubic centimeter after twenty-four hours at 37 C. in the streptomycin-containing broth and after subculture on streptomycin-free agar. The levels of streptomycin in plasma and urine were also determined by a twofold dilution method in broth using a type A Friedländer bacillus, strain T, which was originally isolated from sputum. With the inoculum used, namely 50,000 organisms per cubic centimeter, there was neither stim-

The streptomycin was provided by the National Research Council from supplies assigned for clinical investigations recommended by the Committee on Chemotherapeutics and Other Agents.

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard) and the Mallory Institute of Pathology, Boston City Hospital, and the Department of Medicine, Harvard Medical School.

1. Waksman, S. A.; Reilly, H. C., and Schatz, A.: Proc. Nat. Acad. Sc. **31**: 157 (June) 1945. Youmans, G. P.: Proc. Staff Meet., Mayo Clin. **21**: 126 (March 20) 1946. Molitor, H.: Bacterial Chemotherapy, Federation Proc. **5**: 304 (June) 1946. Buggs.[5] Miller and Bohnhoff.[6]

2. The identification of the strains was carried out at the Mallory Institute of Pathology by one of the authors (L. K.) with the assistance of Miss Marion E. Lamb. Dr. Robert N. Nye also rendered valuable advice. Most of the strains of the Aerobacter and Friedländer (Klebsiella) groups gave similar biochemical reactions, but strains of the latter which failed to react with Friedländer type A or B antiserums were distinguished by their large capsules, the mucoid and stringy character of the surface colonies and by mouse inoculation.

ulation nor inhibition of growth by the body fluids. Controls of the test strain in broth were always run simultaneously.

REPORT OF CASES

The primary interest in this paper is centered in a group of 6 consecutive cases of chronic pyelonephritis which were the first cases of this type to be treated with streptomycin in this hospital and none of which showed any clinical improvement while on this therapy. Various organisms were involved each of which was initially sensitive to concentrations of streptomycin which are readily attainable in blood and urine, but all of them soon acquired extreme resistance to the antibiotic. The patients were permitted to take fluids as desired and had urine outputs estimated between 1,500 and 2,000 cc. per day. Based on previous observations and on published data concerning the absorption and excretion of streptomycin [3] it was assumed that a dose of 0.25 Gm. (250,000 units) every six hours would be adequate. This dose was used to begin treatment in the first cases but was increased successively to 0.25 Gm. every four hours and then 0.5 Gm. every four hours as these patients failed to improve. In later cases treatment was started with an intravenous injection of 1 Gm. followed immediately or in four hours by 1 Gm. intramuscularly, and the latter was then repeated five or six times a day until it became clearly evident that further treatment was futile.

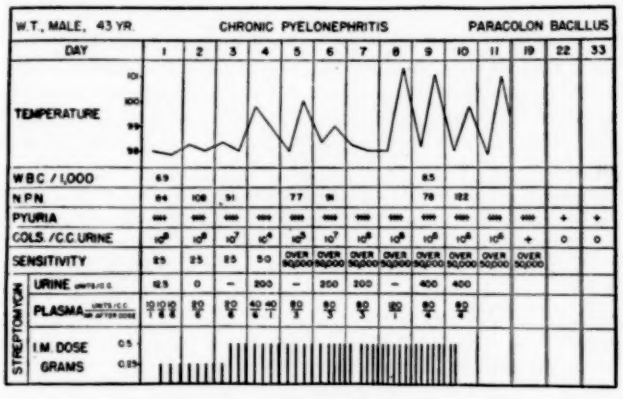

Chart 1.—Relevant observations in case 1. There was no clinical improvement during streptomycin therapy. The organism apparently retained its sensitivity for two days and then increased in resistance to streptomycin more than two thousand fold in the next two days, although high levels were apparently maintained in blood and urine during this time. The urine later cleared without specific therapy during an episode of left flank pain which was relieved by ureteral catheterization, although no obstruction was found.

CASE 1.—A white man aged 43, single, who had been a "cardiac cripple" since childhood, entered the hospital because of increasing dyspnea and ankle edema of four weeks' duration. He had rheumatic heart disease with stenosis and regurgitation of the mitral and aortic valves, and the blood pressure was 214/90. Numerous specimens of urine examined during the course of his hospital stay all had a specific gravity of 1.015 or less, showed 2 plus to 4 plus albumin, occasional red blood cells and hyaline and granular casts and were loaded with pus cells and gram-negative bacilli. Phenolsulfonphthalein excretion was 9 per cent in two hours. Retrograde pyelograms revealed no gross abnormality. The urinary tract infection was first treated with sulfadiazine, but this was discontinued because of a rise in nonprotein nitrogen from 38 to 98 mg. per hundred cubic centimeters. The patient was also given a course of ammonium mandelate without any beneficial effect. He was then started on streptomycin 0.25 Gm. (250,000 units) every six hours and the dose was increased to 0.5 Gm. every four hours. The relevant findings during the course of this treatment and for the following three weeks are shown in chart 1. Streptomycin was stopped after nine days. There was a moderate but temporary decrease in the number of organisms obtained in cultures of the urine on the third and fourth days of the treatment, but this was the only change noted in the status of the urinary infection. The organisms isolated before treatment and during the first three days were sensitive to 25 units, while those obtained on and after the fifth day were resistant to 50,000 units, per cubic centimeter, the largest concentration tested. They were all the same culturally and were classified as paracolon bacillus. The patient's urine was followed after cessation of treatment, and the organisms isolated in the next nine days all had the same resistance. At this point the urine became clear except for a few pus cells, and cultures were negative. Coincident with this change, the patient developed severe left flank pain. It was thought that his left ureter had become plugged. Ureteral catheters were passed and the pain was relieved but the urines remained clear and continued to show no growth.

CASE 2.—A man aged 60, Swedish, was first admitted to another Boston hospital complaining of pain in the left flank and lower part of the back, with burning and frequency of urination. He was operated on for a kinked left ureter associated with hydronephrosis. His postoperative course was stormy and was complicated by embolic events for which bilateral femoral vein ligation was done. He was well for one week after discharge when he suddenly developed severe chest pain which occasioned his entry to the Boston City Hospital. He was treated as a case of coronary thrombosis and on the tenth day he again developed urinary symptoms. The blood pressure was 130/80. A moderately firm and tender mass consistent with the kidney was felt in the left upper quadrant of the abdomen. The urine was loaded with pus and bacteria, contained a slight trace of albumin and had a maximum concentration of 1.013. Phenolsulfonphthalein excretion was 27 per cent in two hours. The Friedländer bacillus was obtained from all cultures of the urine. Retrograde pyelograms showed the right kidney to be normal, but there was distortion of the calices with poor emptying of the pelvis on the left. The patient was given a course of 11.25 Gm. of streptomycin without any effect on the urinary tract infection. The therapy was stopped when it became evident that the organisms being isolated from the urine were resistant to 50,000 units of streptomycin, whereas those obtained before treatment were sensitive to 12.5 units. Cultures of the urine taken during the next thirty days continued to yield similarly resistant organisms. The relevant findings in this case are shown in chart 2.

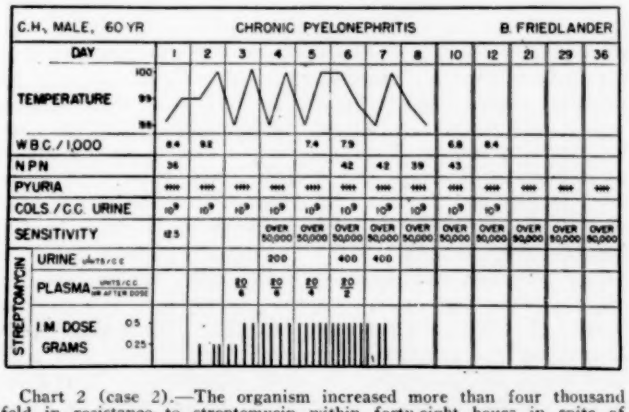

Chart 2 (case 2).—The organism increased more than four thousand fold in resistance to streptomycin within forty-eight hours in spite of seemingly adequate levels in blood and urine, and the urinary tract infection was not controlled.

3. Zintel, H. A., and others: Am. J. M. Sc. **210:** 421 (Oct.) 1945. Anderson, D. G., and Jewell, M.: New England J. Med. **233:** 485 (Oct. 25) 1945. Rutstein, D. D.; Stebbins, R. B.; Cathcart, R. T., and Harvey, R. M.: J. Clin. Investigation **24:** 898 (Nov.) 1945. Heilman, D. H., and others: Am. J. M. Sc. **210:** 576 (Nov.) 1945. Buggs, C. W.; Pilling, M. A.; Bronstein, B., and Hirschfeld, J. W.: J. Clin. Investigation **25:** 94 (Jan.) 1946. Adcock, J. D., and Hettig, R. A.: Absorption, Distribution and Excretion of Streptomycin, Arch. Int. Med. **77:** 179 (Feb.) 1946.

CASE 3.—A woman aged 55, Italian, a housewife, entered the hospital because of gross hematuria of four weeks' duration. For two weeks prior to entry she also had pain in the right upper part of the abdomen, anorexia, weakness and some loss of weight. For three days she felt much worse and was having chilly sensations, with the temperature rising to 102.5 F. on one occasion. Although diabetic, she stopped taking insulin during the last two days. In the hospital her diabetes

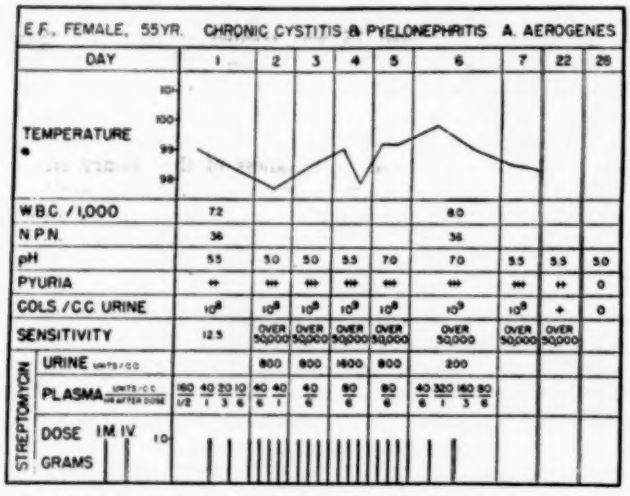

Chart 3 (case 3).—There was more than a four thousand fold increase in resistance of the organism within twenty-four hours after treatment was started. The urine subsequently cleared during a course of mandelic acid followed with sulfonamides.

was readily controlled with insulin. The blood pressure was 150/62. A large firm tender mass, thought to be the kidney, was felt in the right upper quadrant. The urine was loaded with red blood cells at first and later contained numerous pus cells and organisms which on culture showed Staphylococcus aureus and enterococci. The blood nonprotein nitrogen was 40 mg. per hundred cubic centimeters or less on numerous occasions. Phenolsulfonphthalein excretion was about 65 per cent in two hours. Cystoscopy and retrograde pyelography revealed cystitis, a mild hydronephrosis on the right and a normal left kidney. Two blood cultures during the first week yielded a coagulase positive, nonhemolytic Staphylococcus aureus. At first the patient was given sulfadiazine and maintained adequate blood levels with a dose of 1 Gm. three times a day. After the first week she was started on intramuscular penicillin, 20,000 units every three hours. Subsequent blood cultures were negative, but the urinary infection was not controlled and sulfadiazine was stopped after the fifth week. Cultures of the urine during this period were variously reported as yielding B. coli, B. proteus and enterococci. After the fourth week, however, B. aerogenes was found consistently. On the fiftieth hospital day she was started on a course of streptomycin, 1 Gm. every six hours to a total of 21 Gm. The first and last doses were given intravenously and the rest intramuscularly. Some of the relevant data concerning this therapy are shown in chart 3. No improvement was noted. The organism isolated from the urine before treatment was sensitive to 12.5 units of streptomycin, while those present after the first twenty-four hours grew readily in 50,000 units per cubic centimeter. Two weeks later she was given a course of mandelic acid therapy for five days followed by another course of sulfadiazine. The urine cleared gradually during this treatment, became sterile on about the seventy-sixth hospital day and remained clear and sterile until the patient was discharged on the eighty-sixth hospital day.

CASE 4.—A white woman, married, aged 51, a housewife, who had many previous medical and surgical admissions for diabetes and obstructing duodenal ulcer, was known to have pyelonephritis with bilateral hydronephrosis and hydroureter for three years, during which she had many acute exacerbations of symptoms. She entered the hospital this time because of chilly sensations and fever associated with frequency, urgency and cloudy urine. She had previously received many courses of sulfonamide drugs, which she tolerated poorly and which usually were accompanied with retention of the drug and a rise in the blood nonprotein nitrogen. Cultures of the urine had shown B. coli, enterococci and B. mucosus capsulatus (Friedländer's bacillus) at various times. On this admission she had an enlarged, nontender liver, the left kidney was palpable deep in the left flank and there was bilateral costovertebral angle tenderness. The blood pressure was 140/85. Specimens of urine varied in specific gravity up to 1.020, were acid and showed 2 plus albumin, moderate numbers of pus cells and many gram-negative bacilli. The blood nonprotein nitrogen levels ranged between 40 and 50 mg. per hundred cubic centimeters and the phenolsulfonphthalein excretion on two occasions was about 50 per cent in two hours. Urine cultures on this admission showed only B. coli. The patient was given an initial intravenous dose of 1 Gm. of streptomycin followed immediately by 1 Gm. intramuscularly and then 1 Gm. every four hours to a total of 21 Gm. High plasma and urine levels were thus maintained throughout the treatment, as shown in chart 4. There was no improvement in the urinary findings under this treatment. The organisms isolated before therapy were sensitive to 25 units, but those obtained on the following day and again on numerous occasions during the next five weeks were all resistant to 50,000 units. Interestingly enough another organism, B. aerogenes, which was isolated from the urine for the first time after the fifth week, also proved to be resistant to 50,000 units. The patient in the meantime had an operation for a hematoma of the right rectus muscle and also had a chronically infected gallbladder full of stones removed and had to be catheterized many times during the postoperative course.

CASE 5.—A white man aged 64 was admitted to the hospital because of weakness resulting from dietary insufficiency. He had had recurrent attacks of severe pain in the left flank for two years. Aside from poor nutrition and pallor, his physical examination was normal. Blood studies revealed a severe normocytic, normochromic anemia. Urine examinations were negative. Cystoscopy and retrograde pyelography revealed no abnormalities, and specimens of urine obtained from each ureter at that time were clear and sterile. Shortly after this

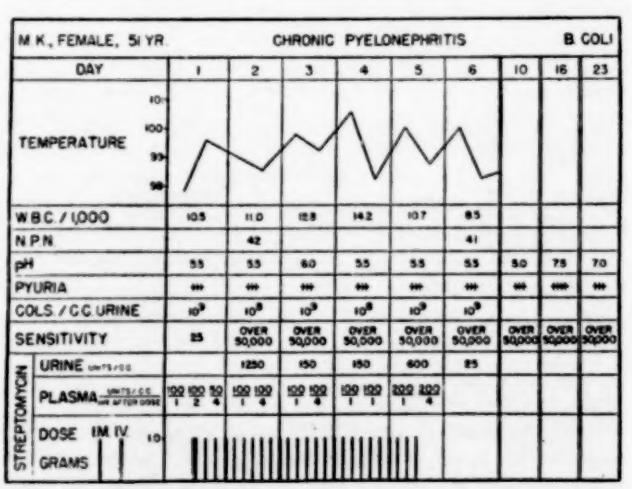

Chart 4 (case 4).—Streptomycin therapy was started with a dose of 2 Gm., 1 of which was given intravenously. In spite of the maintenance of high levels in the blood and urine the organism increased more than two thousand fold in resistance in less than twenty-four hours and there was no clinical improvement.

procedure, however, the patient experienced severe pain in the right costovertebral angle, with fever, and he began to pass cloudy urine, which was loaded with pus and bacteria. Cultures yielded B. pyocyaneus and a Friedländer bacillus which agglutinated in type A antiserum but failed to show capsular swelling. Sulfadiazine was given in small doses but was discontinued because of oliguria, increasing blood levels of the

drug and a rise of blood nonprotein nitrogen from 32 to 50 mg. per hundred cubic centimeters. Penicillin was also given intramuscularly without affecting the urinary infection. Streptomycin therapy was then started with an initial dose of 2 Gm., 1 of which was given intravenously and the other intramuscularly. This was followed by intramuscular injections of 1 Gm. every four hours, but these had to be abandoned because of severe local pain, swelling and tenderness, and generalized

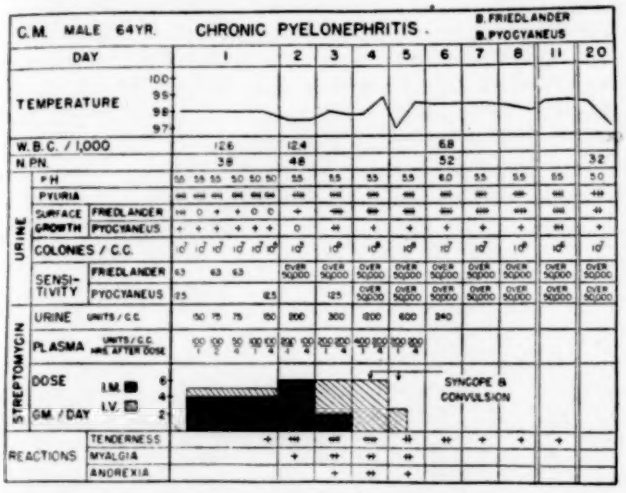

Chart 5 (case 5).—Intensive streptomycin therapy did not affect the urinary infection beyond reducing the bacterial count temporarily. The Friedländer bacillus increased in resistance more than eight thousand fold within twenty-four hours, and the strains of B. pyocyaneus isolated after the third day were more than eight thousand times more resistant than those isolated previously.

myalgia. The doses were then given intravenously, and on two occasions the injections were accompanied with severe vertigo and brief periods of syncope, with right sided clonic convulsive seizures. These reactions were subsequently avoided by giving the injections at a slower rate. There was only a moderate but temporary drop in the number of organisms in the urine during the first day after the treatment was started, but the pyuria was unaffected. Streptomycin was discontinued after a total dose of 26 Gm. had been given, and it was found that both organisms being isolated from the urine were extremely resistant to streptomycin, whereas those obtained before treatment were quite sensitive. The organisms persisted in the urine and retained their resistance during the next four weeks (chart 5).

CASE 6.—A white woman aged 63, a widow, who had suffered from "bladder trouble" for five years, entered the hospital because of chills, weakness, anorexia, lower abdominal discomfort and dysuria of two weeks' duration. She appeared malnourished and chronically debilitated and had moderate suprapubic tenderness. The urine was loaded with pus and bacteria and showed 1 plus or 2 plus albumin in a number of specimens. Several cultures of the blood were negative, but those of the urine repeatedly showed B. proteus and B. coli. Phenolsulfonphthalein excretion was 60 per cent in two hours. Sulfadiazine was given on admission but was discontinued after 8 Gm. because of oliguria and high levels of the drug in the blood, but the nonprotein nitrogen levels remained within the normal range. Streptomycin was begun on the tenth hospital day with an intravenous dose of 0.5 Gm. followed by 0.5 Gm. intramuscularly five times a day to a total of 17.5 Gm. Pyuria and bacilluria diminished by the second day, and the urine was sterile on the third and fourth days. On the following day, however, B. coli appeared and increased steadily and the urine also showed increasing numbers of pus cells. B. proteus, which was originally susceptible in different tests to 50 or 100 units of streptomycin, did not recur, but the strains of B. coli found after treatment was started were resistant to more than 50,000 units. Unfortunately the control cultures of the urine obtained before the streptomycin therapy did not yield B. coli and the earlier cultures of this organism were not available for comparison. The relevant findings are shown in chart 6.

Two additional cases in which streptomycin resistance apparently developed quite rapidly are of interest because the organisms were isolated from the blood in one and from the sputum in the other:

CASE 7.—A man aged 75 was treated at the Peter Bent Brigham Hospital, where the management of his infection was directed by Dr. Charles A. Janeway, who generously provided us with the pertinent data and with transplants of the organisms isolated in his laboratory. The patient entered the hospital because of increasing weakness of the urinary stream of one year's duration. He was known to have auricular fibrillation for several months. Following a suprapubic prostatectomy for prostatic hypertrophy, he developed chills and fever and his blood cultures were positive for B. aerogenes. Intramuscular sulfadiazine and then penicillin did not affect the course of the infection. Streptomycin 0.1 Gm. (100,000 units) intramuscularly every three hours was started on the fourth postoperative day, and the dose was later increased to 0.25 Gm. every three hours. There was slight but temporary improvement, and one negative blood culture was obtained on the day after treatment was started. Streptomycin was discontinued after seven days because chills and fever persisted, and positive blood cultures were again obtained repeatedly during the treatment. The blood urea nitrogen rose steadily from 13 to 94 mg. per hundred cubic centimeters. The patient died several days later and was found at autopsy to have rheumatic heart disease involving the mitral and aortic valves, with superimposed bacterial endocarditis of the mitral valve and bronchopneumonia of both lower lobes. The operative wound was well healed except for a small opening where the suprapubic catheter had been. The organism isolated from the blood at the beginning of the streptomycin treatment was sensitive to 6.25 units per cubic centimeter, while the strain of the same organism obtained from the blood culture three days later grew profusely in broth containing 50,000 units of streptomycin per cubic centimeter.

CASE 8.—A man aged 44 who had a persistent cough productive of large amounts of purulent sputum for more than two years was started on streptomycin therapy on April 4,

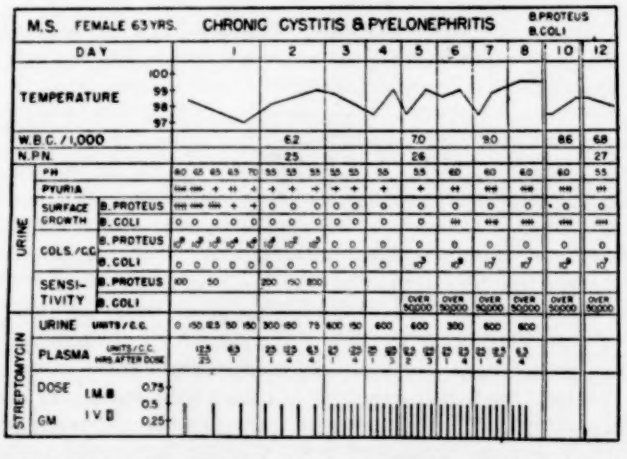

Chart 6 (case 6).—Pyuria decreased and organisms could not be cultured from the urine for two days during the course of streptomycin therapy, but pus and bacteria reappeared two days later. The organism obtained just before treatment was B. proteus and was sensitive to 50 to 100 units, but the one which was obtained from the urine repeatedly after the fourth day of therapy was B. coli and was resistant to more than 50,000 units.

1946 after it was found that his sputum contained Hemophilus influenzae almost in pure culture. He had been treated with penicillin intramuscularly, by inhalation or by both routes almost continuously and with sulfonamides intermittently during the preceding five months. During that time his course con-

tinued downhill in spite of the fact that the penicillin-susceptible organisms were eliminated from the sputum. The streptomycin was given at first by inhalations every four hours of an aerosolized solution containing 250,000 units in 1.25 cc. of saline solution. After five days he was given, in addition, intravenous injections of 1 Gm. four or five times a day. Streptomycin was stopped on April 17 because the patient failed to improve and Hemophilus influenzae organisms in large numbers were still present in the sputum. The patient died on April 26. Autopsy revealed a small carcinoma of the right main stem bronchus and extensive bronchiectasis of both lower lobes. The strain of Hemophilus influenzae isolated from the sputum before streptomycin treatment was begun was sensitive to 1.6 units, while the strains of this organism obtained twenty-four hours later and on several subsequent occasions from sputum and from the lungs at autopsy all grew well in mediums containing 5,000 units of streptomycin per cubic centimeter.

The foregoing cases illustrate and serve to emphasize one important feature of the practical application of streptomycin therapy and perhaps the most unfavorable one. It is only fair to mention also the other and more favorable side of the picture and to cite briefly the remaining 4 cases which were treated at this hospital during the same time and in which excellent therapeutic results were obtained.

The first of these cases was in an infant aged 4 months with a large cervical meningocele which was badly infected with B. proteus morgani and failed to improve on sulfadiazine and penicillin, the latter given topically and intramuscularly. Streptomycin therapy was started when the infant was almost moribund and consisted in daily aspirations of the infected fluid followed each time by the instillation of 50,000 units of streptomycin for seven days and intramuscular injections of 100,000 units every four hours for about ten days. The general condition of the patient improved gradually, cultures of the fluid were sterile on the day after treatment was started and remained so, and the other characteristics of the meningocele fluid returned to normal after a few days. The organism was sensitive to 50 units per cubic centimeter.

The second case was one of Hemophilus influenzae type B meningitis with bacteremia in an infant aged 8 months. Streptomycin treatment was begun on the second day of illness and consisted in daily intraspinal injections of 25,000 units for ten days and intramuscular injections of 200,000 units every six hours for fifteen days, a total of 225,000 units being given by the former route and 11,600,000 units by the latter. Cultures of blood and spinal fluid were all negative after treatment was started and remained so, and complete recovery followed in the next few days. No other forms of antibacterial therapy were used. The organism in this case was sensitive to 1.6 units per cubic centimeter.

In the third case streptomycin was used during what was interpreted as a relapse of influenza bacillus meningitis following treatment with specific antiserum and sulfadiazine. There was also evidence of serum sickness at the time. Organisms were seen in smears of purulent spinal fluid, but cultures were negative. Streptomycin given for six days essentially as in the previous case resulted in clearing of the spinal fluid and gradual clinical recovery.

The last case was that of a girl aged 18 years with chronic bronchiectasis and chronic left suppurative otitis media of about fourteen years' duration. The type A Friedländer bacillus was the predominant organism in the copious purulent sputum, and the same organism together with Staphylococcus albus was found in the aural discharge. An intensive course of penicillin given for serologic syphilis had failed to affect these conditions. An intravenous injection of streptomycin 0.5 Gm. was given, followed by intramuscular injection of the same dose five times a day. After four days this was stopped because of severe local tenderness at the sites of the injections and the streptomycin was then given by inhalation of a nebulized solution containing 300,000 units in 1.5 cc. of saline solution at the same intervals for another nine days. In addition 25,000 units in 0.5 cc. of saline solution was instilled into the left ear three times daily for twelve days. There was a gradual decrease in the amount of cough and sputum and considerable improvement in the general condition but no change in the physical and x-ray findings in the lungs. Friedländer's bacilli decreased in numbers in the sputum gradually over the first four days and could not be recovered again during a follow-up period of three months. H. influenzae, however, appeared for the first time on the third day of treatment and remained the predominant organism in the sputum thereafter. The ear was completely dry by the third day, and Friedländer's bacilli could not be obtained from cultures of the discharge after the first day. The Friedländer's bacilli isolated from the sputum and aural discharge were sensitive to 1.56 units, the Staphylococcus albus from the ear was sensitive to 6.25 units and the Hemophilus influenzae from the sputum was sensitive to 5,000 units per cubic centimeter the first time it was isolated and this has not changed.

UNTOWARD EFFECTS

Except in case 5 the untoward effects observed from the streptomycin therapy in this small group of cases were not severe. All the patients who received intramuscular injections of 0.5 Gm. or more complained of local pain and tenderness, often associated with some redness and swelling, and of myalgia of the back and legs after the first day. These symptoms became so severe in 2 cases that administration by this route had to be abandoned in favor of intravenous injections. One patient suffered from anorexia, malaise and generalized myalgia. The local reactions varied with different lots and seemed to be less with the ones that gave the clearest solutions and presumably contained the least impurities. The intravenous injections produced little or no symptoms when they were given at a rate slower than 1 cc. containing 50,000 units per minute. There was some vertigo, tinnitus and flushing of the face, and 1 patient noted a metallic taste during the injection and vomited after it was completed. In case 5 there was severe vertigo, syncope and brief clonic movements of the right side on two occasions when the injections were given rapidly. The 2 patients who received streptomycin by inhalation experienced no ill effects.

COMMENT

The findings in the first 8 cases indicate that streptomycin fastness may be a major factor in the failure of streptomycin therapy in gram-negative bacillary infections, particularly though not exclusively those of the urinary tract. It is only a matter of theoretical interest whether the resistant organisms obtained after

treatment are derived from originally sensitive ones through some change in their growth requirements conditioned by the exposure to the antibiotic or whether they were originally present in a population of bacteria the sensitive ones of which were originally predominant and were eliminated by exposure to the agent. From the point of view of therapy the important points are that repeated tests of organisms isolated before treatment showed them to be sensitive in vitro, those obtained after treatment may be considered to be totally resistant and the patients fail to respond to treatment with seemingly adequate doses of the antibiotic, as judged from the original sensitivity of the strains and the concentrations of the agent measured in the blood and urine. Practically speaking, therefore, these findings indicate that resistance to streptomycin was acquired in vivo during treatment.

The persistence of infection after streptomycin treatment [4] and the appearance of resistant strains [5] after such therapy have already been noted. Rapidly increasing resistance has also been produced in vitro by growth of organisms in streptomycin-containing mediums.[6] Reimann, Price and Elias [7] mentioned most of the possible causes of failures of streptomycin therapy that could be expected from what is already known of its properties. Some of these may warrant exploration with a view to altering some of the therapeutic procedures in an attempt to increase the efficacy of the antibiotic.

Only one factor will be mentioned, as it may be of particular significance in relation to the urinary tract infections. Almost all the specimens of urine in the present cases, including those not indicated in the charts, were quite acid. It has been shown [8] that streptomycin is much less effective in vitro in an acid medium than in an alkaline one. In 3 patients now under observation preliminary adequate alkalization of the urine has resulted in rapid and complete elimination of the organisms from the urine after streptomycin therapy was started. Control observations are essential, as an occasional infection may be controlled by the alkalization alone before resort is had to the antibiotic. This was noted in at least 1 recent case. That this is not the only factor concerned is indicated by another case now under observation in which alkalization was not attempted because of congestive failure but an equally rapid elimination of the urinary infection took place on streptomycin in spite of the fact that the specimens of urine were all about p_H 5.5. Further studies are necessary to determine how effective this method will be in a large number of cases in which it is feasible.

SUMMARY AND CONCLUSIONS

Twelve cases of infection with various gram-negative bacilli were treated with streptomycin. Eight of these cases failed to show any beneficial effects from this treatment. The failure in each instance was associated with rapid development of extreme resistance to streptomycin.

4. Herrell, W. E., and Nichols, D. R.: Proc. Staff Meet., Mayo Clin. **20**: 449 (Nov. 28) 1945. Reimann, Price and Elias.[7]
5. Buggs, C. W.; Bronstein, B.; Hirschfeld, J. W., and Pilling, M. A.: In Vitro Action of Streptomycin on Bacteria, J. A. M. A. **130**: 64 (Jan. 12) 1946.
6. Miller, C. P., and Bohnhoff, M.: Streptomycin Resistance of Gonococci and Meningococci, J. A. M. A. **130**: 485 (Feb. 23) 1946.
7. Reimann, H. A.; Price, A. H., and Elias, W. F.: Streptomycin for Certain Systemic Infections and Its Effect on Urinary and Fecal Flora, Arch. Int. Med. **76**: 269 (Nov.-Dec.) 1945.
8. Waksman, S. A., and Schatz, A.: J. Am. Pharm. A. (Sc. ed.) **34**: 273 (Nov.) 1945. Loo, Y. H., and others: J. Bact. **50**: 701 (Dec.) 1945. Abraham, E. P., and Duthie, E. S.: Lancet **1**: 455 (March 30) 1946.

Clinical Notes, Suggestions and New Instruments

STREPTOMYCIN IN TULAREMIA

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Medical Service, Army of the United States

The clinician has diligently sought and, on occasion, direly needed a specific therapeutic agent for the treatment of Pasteurella infections. In this country the Pasteurella group of bacilli have clinical importance only in view of the incidence of Bacillus tularensis infection in our human population; Bacillus pseudotuberculosis rodentium and Bacillus pestis infection, the other two known bacilli of the Pasteurella group that cause human infection, are uncommon and geographically of only regional importance in clinical medicine, found in or near the great port cities of America. A recent case of B. pseudotuberculosis rodentium infection (making a total of 2 reported cases in the United States) was described by Moss and Battle [1] in New Orleans in 1941. Sporadic cases of B. pestis infection are stated to occur in the San Francisco area. B. pseudotuberculosis rodentium and B. pestis infection must be considered rare in the United States. Tularemia, on the other hand, first described in California in 1912, has spread eastward and is now known to exist on the Eastern seaboard, in the Southern states and in the Middle West as well as in the northern parts of the United States. Each year hundreds of cases of tularemia are reported throughout the United States in increasing numbers; the disease looms as a major problem in some sections.

Forshay's serum, heralded with so much hope a few short years ago, was tested and found wanting as a specific remedy in the treatment of tularemia. The sulfonamide group of drugs has been tried repeatedly in this country for tularemia and has proved to be of little or no value. Other agents have been tried, including penicillin, without evident success. The treatment of tularemia has remained to this time symptomatic.

This case is reported in the hope that future studies will be made establishing the place of streptomycin in the treatment of tularemia.

REPORT OF CASE

History.—C. S., a white man aged 32, a member of the Navy, was admitted the night of Nov. 16, 1945 complaining of headache and stiff neck. He dated the onset of symptoms to November 13, when he became ill with chills, headache, fever and malaise. One week before onset of the symptoms the patient stated that he had been rabbit hunting about 20 miles east of Lexington, Ky., and shot 45 rabbits. He dressed 6 of these with his bare hands and the following day had a rabbit dinner. The patient's brother-in-law,[2] who helped dress the same rabbits, was admitted to a hospital on Nov. 15, 1945 with an ulcerated finger and fever.

The admission temperature was 104.2 F., with extreme nuchal rigidity and suggestive Babinski and Kernig's signs. The admitting officer failed in an attempted lumbar puncture, as the patient was irrational and uncooperative. Forty thousand units of penicillin was ordered every three hours, as the clinical picture suggested meningitis. The following morning physical examination revealed no change neurologically. Lumbar puncture at this time was successful. The spinal fluid was clear, under no increased pressure, and the laboratory findings were normal. The heart, lungs, extremities and abdomen were clinically normal. The admission chest film was negative. White blood cells numbered 11,700, with 77 per cent polymorphonuclears and 10 per cent stab cells.

Course in the Hospital.—The temperature remained high with penicillin and sulfadiazine. The patient continued to have repeated chills under this regimen. Penicillin was discontinued on November 19 and sulfadiazine was discontinued on November 20. Treatment with streptomycin was begun November 21, and after twenty-four hours of streptomycin the patient's tem-

From the Medical Service, Darnall General Hospital, Danville, Ky.

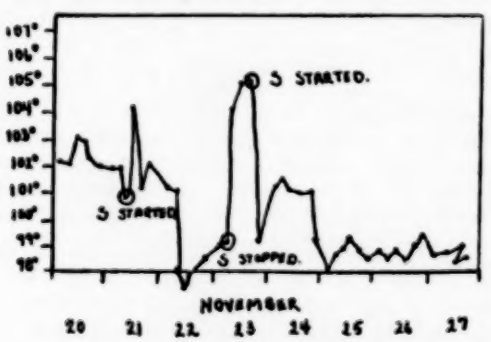
1. Moss, Emma S., and Battle, J. D., Jr.: Human Infection with Pasteurella Pseudotuberculosis Rodentium of Pfeiffer, Am. J. Clin. Path. **11**: 677-699 (Sept.) 1941.
2. The brother-in-law on Jan. 2, 1946 was still convalescing at St. Joseph's Hospital, Lexington, Ky. The titer for tularemia was 1: 1,280.

perature fell to 96 F. and remained at a low level until 9 a. m. November 23, at which time streptomycin was not available.[3] Within a few hours the patient's temperature promptly rose to 105 F. At 9 p. m. November 23 streptomycin became available, and within thirty hours the patient's temperature fell to 99.6 F. and remained under 100 F. for the rest of his hospital stay. One million units of streptomycin was given daily on November 24, 25 and 26. The last million units was divided equally and the patient received one-half million units on November 27 and 28. This completed treatment with streptomycin. A total of 6 million units was given over a seven day period.

Repeated animal inoculation (mouse) and blood cultures were negative. Agglutination for tularemia revealed 0 November 20, 1:40 November 24, 1:320 November 28, 1:640 December 3, 1:2,560 December 6 and 1:1,280 December 10.

No complications due to streptomycin were noted. On November 21 physical signs of lobar pneumonia developed. This was confirmed by roentgenogram. Direct sputum examination and animal inoculation failed to reveal pneumococci. The pneumonia gradually cleared and on December 11 a chest film revealed complete resolution. At the height of fever the urine showed 2 plus albumin. This subsided and the urine became normal with the fall in temperature. The white blood cells on repeated count numbered between 8 and 13 thousand, with many young forms and toxic changes. Streptomycin levels were not done, as the method was not available at this hospital.

On December 12 the patient was transferred to a navy hospital for further convalescence.



Temperature changes.

The final diagnosis was tularemia, typhoidal type; pneumonia, right lower lobe, lobar, tularemic.

COMMENT

Typhoidal tularemia is a serious disease. This patient had repeated chills, was mentally disturbed and on several occasions was found to be hallucinating. Toxemia was extreme and carphologia was noted. While in the hospital he developed pneumonia, a not infrequent finding in severe tularemia and often a fatal complication. With this history, physical findings and blood titer a diagnosis of tularemia was made. A casual glance at the temperature chart indicates that streptomycin played a role in the patient's recovery. Twenty-four hours after streptomycin was started his temperature fell and remained at a low level until the drug was no longer available. When streptomycin was stopped, within eight hours his temperature rose to 105 F. When it was reemployed, in thirty hours, the temperature again fell. Therapeutic effects with streptomycin were prompt and evident in each instance within thirty hours. The drug must be given often or else it loses its effectiveness. Streptomycin was administered intramuscularly every three hours, 125,000 S. units at each dose. Like penicillin, it would appear that streptomycin is rapidly excreted from the body.

Tularemia, when severe, is characterized by continued fever, which in the past did not respond to drug therapy. Streptomycin apparently shortened the course and unequivocally reduced the fever in this case. Without interruption of therapy an earlier reduction in fever might have occurred. Recovery was complete.

3. Streptomycin was supplied by an army hospital 200 miles away. Two million units of the drug was obtained with each request; the second shipment was delayed.

CONCLUSIONS

1. In a single case of tularemia, typhoidal type, streptomycin appeared to influence the fever and course of the infection beneficially.

2. Streptomycin may prove of value in the three known Pasteurella infections of man.

3. When administering streptomycin the drug must be given frequently and in large doses to be effective, as streptomycin appears to be rapidly excreted.

AORTECTOMY FOR THORACIC ANEURYSM

A Supplementary Report

JOHN ALEXANDER, M.D., and FRANCIS X. BYRON, M.D.
Ann Arbor, Mich.

In a previous issue of THE JOURNAL we[1] reported the case of a youth aged 19 who had a saccular aneurysm of the thoracic aorta, apparently secondary to an aortic coarctation, on whom we performed a resection of the aneurysm-bearing portion of the aorta. That report was prepared twelve months after the operation. As the case is unique, no previous report of a successful aortic resection for aneurysm having appeared in the literature, we feel that a short summary of the final outcome of the case should be published.

Our previous report covered one year, from Oct. 20, 1943 (the date of operation) to Oct. 18, 1944. On Oct. 18, 1944 the patient's blood pressure averaged about 200/110 and his heart was moderately enlarged; his retinal hemorrhages and exudates had largely cleared and localized angiospasm was still present. He had no troublesome symptoms.

He continued to be asymptomatic and was engaged in full time law school activities until Feb. 6, 1945. On that day, while playing a game of chess, he was seized with a violent pain between the scapulae, radiating up the back of the neck and finally centering just behind the eyes. The pain was so severe that he could not talk for almost twenty minutes. He is supposed to have lost consciousness briefly, and on awakening he was nauseated and vomited. He was taken immediately to the University of Michigan Hospital, where physical examination revealed opisthotonos with severe nuchal rigidity, equal constricted pupils, photophobia, cardiac enlargement and a loud, harsh systolic murmur over the entire precordium. The blood pressure was 190/110, pulse rate 92, respiratory rate 24 and temperature 98.2 F. The neurologic examination showed, in addition to the nuchal rigidity, only a positive Kernig's sign and some reduction in auditory acuity on the right side.

A spinal fluid examination revealed a pressure of 160 mm.; the fluid was grossly bloody and the supernatant fluid was xanthochromic. The urine and routine blood studies were not noteworthy. The specific gravity of the former was 1.029. The blood nonprotein nitrogen was 37.9 mg. per hundred cubic centimeters.

The diagnosis of spontaneous subarachnoid hemorrhage, possibly due to rupture of an aneurysm of the circle of Willis, was made. He was kept at rest in bed with gradual disappearance of symptoms, save for an occasional headache. He was discharged from the hospital on March 22, 1945.

On his return home he gradually increased his activities without apparent ill effect. He remained asymptomatic except for occasional morning headaches. On July 31, 1945 he returned to the hospital for a check-up neurologic examination. There were no positive neurologic findings. Inspection of the ocular fundi revealed only arteriosclerosis of the retinal vessels.

In October 1945 the patient was married. His home physician reported as follows: Approximately one week after his marriage he suffered a cerebral-vascular accident with partial paresis of one arm. Two similar and more severe episodes occurred during the following weeks, resulting in a hemiplegia. On Nov. 4, 1945, while being bathed, he complained of severe substernal pain, lost consciousness and died. The diagnosis made by his attending physician was cerebral-vascular accident. Permission for a postmortem examination could not be obtained.

From the Department of Surgery, University of Michigan Medical School.

1. Alexander, John, and Byron, F. X.: Aortectomy for Thoracic Aneurysm, J. A. M. A. **126**: 1139 (Dec. 30) 1944.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

PENICILLIN IN OIL AND WAX.—A sterile suspension of calcium penicillin in a mixture of highly refined peanut or sesame oil and white wax, U. S. P., or yellow wax, U. S. P.

Actions and Uses.—Penicillin suspended in oil and wax is slowly absorbed following intramuscular injection. After the injection of 1.0 cc. of a mixture containing 300,000 units of penicillin per cubic centimeter significant blood concentrations of penicillin have been observed for from twelve to twenty-four hours. Injection of lower concentrations decreases the duration of effective penicillin blood levels, 100,000 units giving a measurable blood level for approximately eight hours and 200,000 units being effective for about twelve hours.

Penicillin in oil and wax may be used for all the conditions for which penicillin dissolved in saline solution is used. The principal difference between the two lies in the frequency of injection: saline solutions must be injected once every two to three hours, whereas oil and wax mixtures require injection only every twelve to twenty-four hours.

Dosage.—At least 300,000 units every twenty-four hours should be administered, either as a single dose or in two doses twelve hours apart. For severe infections two 300,000 unit doses twelve hours apart may be necessary. For the treatment of gonorrhea, one injection of 300,000 units of penicillin in oil and wax appears to be sufficient for the majority of cases. If the subjective symptoms do not subside rapidly, a second injection of 300,000 units should be given twenty-four hours after the first.

To facilitate withdrawal and administration of penicillin in oil and wax, a dry, warm syringe fitted with an 18-gage needle should be used to withdraw the mixture from the ampul, which has been warmed to 37 to 39 C. Injection should be made through an 18-gage needle deep into the upper outer quadrant of the buttocks. Before injection the plunger of the syringe should be drawn back slightly to make certain the needle is not in a blood vessel. Intravenous injection may be dangerous.

BRISTOL LABORATORIES, INC., SYRACUSE, N. Y.

Penicillin (Calcium) in Oil and Wax: 300,000 units per cubic centimeter, 10 cc. vials. Calcium penicillin suspended in peanut oil containing 4.8% (W/V) white wax, U. S. P.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Penicillin (Calcium) in Oil and Wax: 300,000 units per cc., 5 cc. vials. Calcium penicillin suspended in peanut oil containing 4.8% (W/V) white wax, U. S. P.

PENICILLIN (See New and Nonofficial Remedies, 1946, p. 212).

The following additional dosage form has been accepted:

COMMERCIAL SOLVENTS CORPORATION, TERRE HAUTE, IND.

Crystalline Penicillin Sodium: 200,000 and 500,000 units in 20 cc. vials.

SULFANILAMIDE (See New and Nonofficial Rem dies, 1946, p. 189).

The following dosage form has been accepted:

FLINT, EATON & CO., DECATUR, ILL.

Tablets Sulfanilamide: 0.25 Gm.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1946, p. 199).

The following additional dosage form has been accepted:

FLINT, EATON & CO., DECATUR, ILL.

Tablets Sulfathiazole: 0.25 Gm.

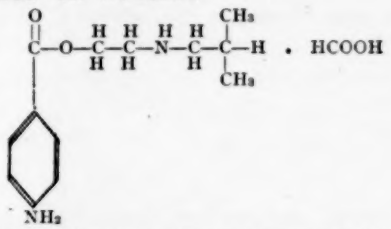
SODIUM DEHYDROCHOLATE (See New and Nonofficial Remedies, 1946, p. 354).

The following dosage form has been accepted:

CARROLL DUNHAM SMITH PHARMACAL CO., ORANGE, N. J.

Solution Sodium Dehydrocholate 20% W/V: 5 cc. vials.

MONÓCAINE FORMATE.—2-Isobutylamino-ethyl *p*-aminobenzoate formate.—2-*p*-Aminobenzoxy-N-isobutyl-ethylamine formate.—The formic acid salt of the ester formed from *p*-aminobenzoic acid and the N-isobutyl derivative of ethanolamine.—$C_{14}H_{22}N_2O_4$.—M. W. 282.34.



Actions and Uses.—Monocaine formate is proposed for use in spinal anesthesia. Its action is qualitatively identical with that of procaine, but quantitatively it may produce about one-third greater anesthetic and toxic effect. For this reason approximately only three fourths of the amounts usually employed for procaine can be given with an equal degree of safety and anesthesia.

Dosage.—As with the use of other agents for spinal anesthesia the dosage is dependent on the speed and mode of injection, the size of the patient and the length of the operative procedure to be performed. As already indicated, the dosage of monocaine should correspond to about three fourths of that ordinarily employed for procaine.

Tests and Standards.—

Monocaine formate occurs as odorless, white crystals, which melt at 136-139 C. It is freely soluble in water and in ethanol; very slightly soluble in benzene, and slightly soluble in chloroform and in ether. The *p*H of a 1 per cent aqueous solution is about 6.1.

Extract about 150 mg. of monocaine formate as described in the assay given later. Evaporate the aqueous layer to dryness on a steam bath. Dissolve the residue in 1 cc. of 4 normal hydrochloric acid; add 40 mg. of *o*-phenylenediamine and reflux the solution gently for forty-five minutes. Allow the solution to cool, neutralize with ammonium hydroxide and let stand for a few hours to allow crystal formation to occur. Filter the crystals from the mother liquor and recrystallize from water. The benzimidazole derivative formed from the formic acid present melts at 171 C.

Evaporate the chloroform layer from the foregoing extraction to dryness at a temperature of about 60 C. in a stream of air. Dissolve the residue in 5.5 cc. of tenth-normal hydrochloric acid. Dilute one half of the acid solution to 40 cc. and carry out the following identification tests: Add to a 5 cc. portion of the diluted solution 0.5 cc. of diluted hydrochloric acid and 0.5 cc. of 10 per cent sodium nitrite solution, followed by 10 cc. of ammonia water containing 0.2 Gm. of beta-naphthol: an orange precipitate forms which is ether soluble. Add 1 cc. of potassium mercuric iodide solution to 2 cc. of the monocaine hydrochloride solution: a white precipitate forms. Dilute the second half of the acid solution to 5 cc. with water. Add two drops of sulfuric acid and 1 cc. of a saturated solution of sodium nitrite; heat to 50 C.: a yellow emulsion forms. Continue heating: an orange-red solution results and reddish oil droplets form on the bottom of the tube and in the froth.

Accurately weigh about 0.2 Gm. of monocaine formate. Dry over phosphorus pentoxide in a vacuum desiccator: the loss in weight is not more than 0.5 per cent. Ash about 0.2 Gm. of monocaine formate, accurately weighed: the ash content is not more than 0.15 per cent.

Transfer 0.15 Gm. of monocaine formate, accurately weighed, to a separator containing 25 cc. of chloroform. Add 10 cc. of water to dissolve the crystals; then add three drops of ammonium hydroxide (28 per cent) and extract the aqueous solution with the chloroform. Drain the chloroform layer through a pledget of cotton. Repeat the extraction four more times with 15, 10, 10 and 10 cc. portions of chloroform. Evaporate the combined chloroform extracts at a temperature of about 60 C. in a stream of air. Dissolve the residue in 5 cc. of neutral ethanol and heat to insure complete solution. Add 10 cc. of tenth-normal hydrochloric acid and two drops of methyl red indicator. Rinse the sides of the beaker with about 10 cc. of water and titrate the excess acid with tenth-normal sodium hydroxide. Each cubic centimeter of tenth-normal hydrochloric acid is equivalent to 0.02823 Gm. of monocaine formate: the amount of monocaine formate found is not less than 95.0 per cent.

Decant the residual aqueous layer in the separator into a 250 cc. beaker. Wash the funnel with two 20 cc. portions of water and add the washings to the original solution. To the combined mixture add 1 Gm. of sodium carbonate and dilute the solution with water to approximately 100 cc. Evaporate the solution to about 50 cc. by gentle boiling. Titrate 25 cc. of tenth-normal potassium permanganate into the hot solution. Carefully acidify (*caution*) the solution with concentrated sulfuric acid. Clear the solution by titration with 15 cc. of tenth-normal oxalic acid and finally titrate the excess oxalic acid with more of the tenth-normal potassium permanganate. The difference between the total volumes of potassium permanganate and oxalic acid is due to the oxidation of formic acid. One cc. of tenth-normal potassium permanganate is equivalent to 0.002301 Gm. of formic acid: the amount of formic acid found is not less than 15.8 per cent nor more than 16.8 per cent of the weight taken.

NOVOCOL CHEMICAL MFG. CO., INC., BROOKLYN

Monócaine Formate *(Crystals):* 50, 100, 150 and 300 mg. ampuls; 200 and 500 mg. containers (multiple dose). For spinal anesthesia.

Sterile Solution Monócaine Formate 5%: 2 cc. ampuls for spinal anesthesia. Each cubic centimeter contains 50 mg. of monocaine formate in sterile distilled water.

U. S. patent 2,139,818 (Dec. 13, 1938; expires 1955).
U. S. trademark 353,653.

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SATURDAY, SEPTEMBER 7, 1946

CAROTID SINUS SYNDROME

The regulation of blood pressure is an automatic proprioceptive reflex mechanism, which acts mainly by the intermediation of the pressoreceptor innervation of arterial and venous vascular areas. Knowledge of the role of the carotid sinus reflex in regulating and controlling the endovascular blood pressure is due chiefly to the researches of Hering. These researches, confirmed by those of Heymans and de Castro, demonstrated that the dilated portion of the bifurcation of the common carotid artery is richly supplied with sensory receptors which originate in the adventitia and leave the sinus as the sinus nerve of Hering or the intercarotid nerve of de Castro to join the glossopharyngeal nerve. Thus, afferent direct nerve connection exists between the carotid sinus and the medullary centers.

Weiss and Baker [1] called attention to the clinical significance of the hyperactive carotid sinus reflex. They demonstrated that an abnormally sensitive carotid sinus mechanism can be responsible for attacks of unconsciousness and convulsions and that such attacks can be reproduced by pressure over one carotid sinus. In a study of 15 patients with hyperactive carotid sinus reflex these authors found that the attacks were associated with cerebral anoxemia resulting either from cardiac asystole or from a primary reflex depression of the blood pressure. A hypersensitive state of the carotid sinus reflex may produce unconsciousness, convulsions or milder manifestations through one or more three main reflex arcs. In man the three motor pathways responsible for syncope involve the vagus nerve, the vasomotor depressor nerves or the central motor pathways. In a mixed form one or the other pathway may play the dominant role. In normal subjects mechanical stimulation of the carotid sinus does not produce symptoms. The hyperactive carotid sinus reflex may be either unilateral, involving only one sinus, the activity of the other reflex remaining normal, or bilateral. Three types of carotid sinus syndrome have been described. In the vagal type the symptoms, particularly the dizziness, fainting and weakness, result from cardiac asystole. The asystole is due either to sinoauricular or to auriculoventricular block, which in its turn produces acute cerebral anoxemia. In its pure form the afferent reflex travels over the vagus nerve to establish a heart block. The depressor type usually appears in association with one or the other two types. The symptoms result from primary reflex vasodilatation and secondary depression of the blood pressure entirely unrelated to cardiac slowing or any form of cardiac arrhythmia. In the cerebral type the symptoms result apparently from impulses which travel directly to the brain. The attacks may be induced within as short a period as five seconds. Neither atropine nor epinephrine aborts or relieves the cerebral type of attack. Treatment of the sinus with procaine hydrochloride, however, makes the local stimulus ineffective.

The type of carotid sinus reflex mechanism responsible for the symptoms in a case can be determined by observing the heart rate or the blood pressure during an induced attack and by the use of atropine sulfate or ephedrine. A solution of epinephrine sulfate given intravenously in a dose of 1 mg. abolishes the vagal reaction within three minutes but does not alter the depressor or the cerebral reaction. A subcutaneous injection of 0.5 cc. of a solution of epinephrine hydrochloride 1:1,000 abolishes both the vagal and the depressor reaction but does not alter the cerebral reaction. Sigler,[2] in a study of hyperactive cardioinhibitory reflex in a series of 1,886 patients, including 1,151 males and 735 females, found that the reflex occurs with greater frequency and in higher degrees of response in males than in females. The frequency and degree of response were increased as age advanced. Coronary disease was found to be the most common condition in which the reflex occurs with the greatest frequency and the highest degrees of response.

In a study of 115 patients with a hyperactive cardioinhibitory reaction, Nathanson [3] found that 77, or 67 per cent, were without symptoms suggestive of carotid sinus syndrome. Twenty-three patients were instances of the carotid sinus syndrome. In 10 patients the manifestations of the syndrome were the chief complaints, while in the remainder these symptoms were secondary or of a relatively mild degree. Attacks of syncope were experienced by only 6 patients. Attacks of sufficient severity and frequency to cause serious debility were experienced by only 4. Nathanson concludes that a large proportion of persons possessing active cardioinhibitory reflex of the carotid sinus do not exhibit the manifestations of the carotid sinus syndrome. Therefore a definite

1. Weiss, Soma, and Baker, J. P.: The Carotid Sinus Reflex in Health and Disease: Its Role in the Causation of Fainting and Convulsions, Medicine **12**: 297, 1933. Weiss, Soma; Capps, R. B.; Ferris, E. B., Jr., and Munro, Donald: Syncope and Convulsions Due to a Hyperactive Carotid Sinus Reflex, Arch. Int. Med. **58**: 407 (Sept.) 1936.

2. Sigler, L. H.: Hyperactive Cardioinhibitory Carotid Sinus Reflex: Possible Aid in the Diagnosis of Coronary Disease, Arch. Int. Med. **67**: 277 (Jan.) 1941.

3. Nathanson, M. H.: Hyperactive Cardioinhibitory Carotid Sinus Reflex, Arch. Int. Med. **77**: 491 (May) 1946.

distinction must be made between the hyperactive carotid sinus reflex, which designates a hyperactive response to stimulation of the carotid sinus, and the carotid sinus syndrome, which designates a clinical condition. In an attempt to determine the site of hypersensitivity of the hyperactive cardioinhibitory reflex Nathanson studied 12 male patients. In each instance a prolonged cardiac standstill of at least six seconds' duration could be elicited repeatedly by pressure on the right carotid sinus. When atropine sulfate was injected, pressure on the carotid sinus produced an average drop in systolic pressure of 15 mm. of mercury and in diastolic pressure of 4.2 mm. of mercury. Nathanson concludes that, the afferent pathway having been excluded as the site of hypersensitivity, either the vagus center in the medulla or the efferent path, the vagus nerve, must be considered responsible for the hyperactive response. The evidence strongly favors a hypersensitivity of the vagus nerve. This is supported by the frequent association of a hyperactive carotid sinus reflex with clinical disease of the peripheral end organ, the heart.

The localization of the site of hypersensitivity of the carotid sinus reflex is of more than theoretical significance. Surgical denervation of the carotid sinus is a method of therapy for patients who do not respond to conservative therapy. Craig and Smith [4] did a denervation of the carotid sinus on 13 patients. Of the 12 followed up results were excellent in 4, good in 1, fairly good in 4 and poor or failures in 3. A hyperactive response of the vagus nerve to stimuli from various other sensory areas is probably an explanation for some therapeutic failures following denervation of the carotid sinus.

PHASE REACTION IN RHEUMATIC FEVER

In 1939 Coburn and his associates [1] in the Columbia University College of Physicians and Surgeons described a new precipitation reaction in rheumatic fever. When the serum of a patient in the prerheumatic state (hemolytic streptococcus pharyngitis) is mixed with the serum of a patient in the acute stage of the disease, a heavy flocculent precipitate often forms. A more detailed study of this "phase reaction" is described by Wedum and his associates [2] at the University of Colorado School of Medicine.

Wedum studied cross reactions between the serums of 491 men of the Army Air Force. Of these 122 presented rheumatic fever, 181 nasopharyngitis, tonsillitis or sinusitis, 38 atypical pneumonia and 150 miscellaneous diseases. Wedum assumes that there is an "A substance" in prerheumatic serums which reacts with a "B substance" present in serums during subsequent acute stages of the disease. Some rheumatic fever serums tended to precipitate spontaneously, which observation led to the conclusion that such serums contain both A and B substance.

During the first three days after admission to military hospitals 70 per cent of 98 patients with rheumatic fever had 2 plus to 3 plus B substances; 20 per cent had a mixture of A and B substance, and 10 per cent only A substance. During hospitalization there was a rapid fall in B titer and a secondary increase in A titer. This was followed by a terminal loss of A titer.

Serums from army personnel hospitalized for nonrheumatic disease, such as atypical pneumonia or nasopharyngitis, were found to contain the same two substances, though in quite different amounts and relative titers. Although serums from patients with rheumatic fever contain A or B substance more frequently than serums from other diseases, neither substance is exclusively diagnostic of rheumatic fever. Wedum demonstrated B substance in Hodgkin's disease, acute tuberculosis with abortion, lung abscess with surgical drainage, carcinoma of the stomach, burns, perforated peptic ulcer and arteriosclerotic gangrene.

In patients with rheumatic fever, partial collapse has been reported following administration of convalescent serum.[3] Recurrence of rheumatic fever has been reported after administration of serums obtained from acute rheumatic fever donors.[4] Blood plasma from normal donors has also caused an increase in rheumatic activity.[5] Two of Wedum's rheumatic patients had unfavorable clinical responses following a compatible normal blood transfusion. In each case the recipient was B positive, and the pooled normal donor blood A positive. When the serums of donor and recipient were mixed, a precipitate formed. The unfavorable clinical response was therefore assumed to be due to intravascular or interstitial precipitation.

Whether or not the "phase reaction" is a true immunologic phenomenon has not been determined. Similarity to the precipitinogen in yellow fever [6] is suggestive. Phase reactions are also reported in typhus,[7] postvaccinal hepatitis [8] and infectious myxomatosis.[9] Determination of the nature of the A and B substances in prerheumatic and rheumatic serums therefore may be of clinical significance.

4. Craig, W. M., and Smith, H. L.: The Surgical Treatment of Hypersensitive Carotid Sinus Reflexes, Yale J. Biol. & Med. **11**: 415 (May) 1939.

1. Coburn, A. F., and Pauli, R. H.: J. Exper. Med. **69**: 143, 1939.

2. Wedum, A. G., and Wedum, B. G.: Proc. Soc. Exper. Biol. & Med. **61**: 432 (April) 1946.

3. Green, C. A.; Glazebrook, A. J.; Thompson, S., and Hopkins, W. A.: Proc. Roy. Soc. Med. **33**: 275, 1940.

4. Friedman, M.; Klein, R., and Rosenblum, P.: Effects of Serum Transfer in Patients with Rheumatic Fever, Am. J. Dis. Child. **56**: 1304 (Dec.) 1938.

5. Griffith, G. C.; Leake, W. H., and Butt, H.: Modern Concepts of Cardiovascular Disease, Am. Heart A. **14**: 7, 1945.

6. Hughes, T. P.: J. Immunol. **25**: 275, 1933. Lennette, E. H., and Perlowagora, A.: Am. J. Trop. Med. **25**: 11, 1945.

7. Smorodintzeff, A. A., and Fradkina, R. V.: Proc. Soc. Exper. Biol & Med. **56**: 93, 1944.

8. Sawyer, W. A.; Meyer, K. F.; Eaton, M. D.; Bauer, J. H.; Putman, P., and Schwentker, F. F.: Am. J. Hyg. **40**: 35, 1944.

9. Rivers, T. M.; Ward, S. M., and Smadel, J. E.: J. Exper. Med. **69**: 31, 1939.

Current Comment

DEMEROL

Elsewhere in this issue (page 43) appears a letter from Paul de Kruif replying to a criticism of an article on Demerol in the *Reader's Digest* for June made by Mr. H. J. Anslinger, Commissioner of Narcotics, in THE JOURNAL, July 13. De Kruif feels that he has been treated unfairly by Mr. Anslinger, and he quotes in his support statements by Himmelsbach, Batterman and Yonkman. Whether or not de Kruif's writing accurately reflected the views of Batterman and Yonkman, many competent authorities in the field of pharmacology question the conclusions reached by these investigators. Moreover, a letter by Dr. C. K. Himmelsbach, which appears also in this issue of THE JOURNAL (page 43), asserts that the de Kruif article has done harm and that patients with primary Demerol addiction have recently been admitted to the United States Public Health Service hospital for treatment. Finally, a supplementary statement by Mr. Anslinger calls attention to the fact that Demerol, since July 1, 1944, has been subject to the provisions of the Federal Narcotic Law and as such is under the same restrictions as opium and cocoa leaves, their salts, derivatives and compounds. Nowhere in the article by de Kruif published in the *Reader's Digest* is this fact made available to the reader. Mr. Anslinger submits as a part of his reply another contradiction of a statement made by de Kruif in his article and in addition a report on a considerable number of cases of addiction to Demerol. The article on Demerol in the *Reader's Digest* was uncritical, unsound and potentially harmful to great numbers of people. It served to embarrass physicians and seemed to all intents and purposes a blurb for a drug controlled by one manufacturer.

EXCLUSION OF PHYSICIAN FROM HOSPITAL STAFF

In this issue of THE JOURNAL (p. 45) appears an abstract of a decision by the Court of Appeals of Maryland upholding the right of the governing board of a private hospital to appoint and remove the members of its medical staff in accordance with the provisions of its by-laws. The decision declares that a physician cannot object to his removal from the visiting staff of a private hospital whose by-laws provide that appointments to all divisions of the medical staff should be made for only one year. This decision reaffirms a rule of law that has been well established since 1924, when it was held that a private hospital has the right to exclude any physician from practicing therein, and such exclusion rests within the sound discretion of the managing authorities.[1] The only restrictions on the internal management of a private corporation are that the conduct proposed be neither fraudulent, illegal nor ultra vires. A similar rule, when the regulations reasonably tend to promote efficiency, has been applied to the governing board of a government hospital in the absence of any constitutional or statutory provisions to the contrary. Thus, even in the case of government hospitals, regulations having the effect of denying the use of the hospital facilities to sectarian practitioners have been upheld.[2] The Maryland decision also held that the adoption of the rules and regulations by the hospital board did not constitute a combination or conspiracy in restraint of trade in violation of the Sherman antitrust act. A monopoly, said the court, is an exclusive privilege which prevents others from engaging in a trade or business or from dealing in a specified commodity; but a grant of privileges, even though monopolistic in character, does not constitute a monopoly in the constitutional sense when reasonably required for protection of some public interest, when given in return for some public service or when given in reference to some matter not of common right. It was obvious to the court that the rules and regulations of the medical board of the Maryland hospital concerned do not restrain interstate trade or commerce.

1. Van Campden v. Olean General Hospital, 205 N. Y. S. 554 [affirmed in 147 N. E. 219].

APLASTIC ANEMIA AND TRIDIONE

Tridione (3,5,5-Trimethyloxazolidine-2,4-dione) has recently come into rather wide use in the treatment of petit mal epilepsy. The manufacturer has submitted the product to the Council on Pharmacy and Chemistry and that body recently voted to accept it for inclusion in its annual publication New and Nonofficial Remedies. An announcement of acceptance will appear in an early issue of THE JOURNAL. Clinical experience with the new drug indicates that it fulfils a need not provided by either phenobarbital or diphenylhydantoin (Dilantin) sodium, which are primarily effective in grand mal. In none of the extensive animal and clinical investigations that have been done have toxic reactions of a serious nature been encountered. Toxic manifestations observed have for the most part consisted of occasional skin eruptions, photophobia or blurring of vision with diminution in visual acuity not associated with optic nerve changes and gastric irritation, nausea, vomiting, dizziness and drowsiness, in about that order of frequency. These have been reversible and subside on temporary withdrawal of the drug. Until recently blood changes occurring with the use of Tridione had not been recognized. Reference to a case of aplastic anemia that resulted in death [1] and one of nonfatal granulocytopenia requiring hospitalization of one of his patients were first mentioned publicly by Lennox [2] in a paper read before the pediatric section at the recent annual session of the Association in San Francisco. Elsewhere in this issue of THE JOURNAL are detailed reports of the former [1] and other cases [3] exhibiting changes in the blood following the use of Tridione. Thus far 2 nonfatal cases of granulocytopenia and

2. Right of Governing Board of a Hospital to Exclude Cultists and Other Undesirable Practitioners, prepared by Bureau of Legal Medicine and Legislation, American Medical Association, A. M. A. Bull., April 1936, p. 80. Holloway, J. W., Jr.: Hospitals and the Selection of Medical Staffs, Wisconsin M. J. 42: 1151 (Nov.) 1943.

1. Harrison, Francis F.; Johnson, Roswell D., and Ayer, Darrell: Fatal Aplastic Anemia Following Use of Tridione and a Hydantoin, this issue, p. 11.

2. Lennox, William G.: Tridione in the Treatment of Epilepsy, to be published.

3. Greaves, Robert J.: Sensitivity to Tridione, this issue, p. 44. Mackay and Gottstein.[4]

2 cases of death from aplastic anemia have been reported. As indicated by the authors of one case report [4] in which fatal aplastic anemia ensued, careful complete, periodic blood examinations should be made in patients who receive the drug over long periods of time and the drug should not be used in the presence of any blood dyscrasia, hemorrhagic tendency or known predisposition to blood disorders. The use of small initial doses and early withdrawal of the drug at the first sign of anemia, leukopenia or thrombocytopenia may provide the means for prevention of irreversible aplasia. Until more frequent serious toxic effects are encountered with Tridione, its continued use with due regard to such occurrences is considered to be a comparatively safe adjunct in the treatment of epilepsy, but these reports once again demonstrate the need for constant observation of patients when the effective, but potent, drugs of today are administered.

4. Mackay, Roland P., and Gottstein, Werner K.: Aplastic Anemia and Agranulocytosis Following Tridione: A Fatal Case, this issue, p. 13.

ARE AMINO ACIDS NEW MIRACLE DRUGS?

Protein hydrolysates and amino acid mixtures are rapidly becoming as notorious as the vitamins. New and astounding claims of therapeutic or nutritional virtue appear in the press and even in some professional publications. No doubt amino acid therapy has a definite and useful place in medicine. Even the most enthusiastic proponent of the virtues of the amino acids will be astounded, however, at the therapeutic results claimed for the preparation marketed by Vincent Christina & Co. under the name "Aminogen" (not to be confused with "Amigen"). According to an advertisement appearing, as might be expected, in *Modern Medicine,* "Aminogen" should be used in the treatment of gastroduodenal ulcers. This in itself is not remarkable, since Co Tui and others have claimed benefit in such cases by the administration of amino acid mixtures orally. However, "Aminogen" is claimed to be so miraculous in its curative powers that, when given in 2 cc. amounts intragluteally, it "aids in restoring normal protein plasma levels," "aids protein regeneration," "encourages hemoglobin formation," "eliminates muscular spasms," "controls pain" and "hastens ulcer healing." Just how 2 cubic centimeters of an amino acid solution, even if given hourly, could have any measurable effect on the "protein plasma level" or aid protein regeneration is not explained. Perhaps moistening the tongue with beef broth might accomplish the same benefit without the inconvenience of an intragluteal injection, and it would taste better! The antispasmodic and analgesic actions of small amounts of amino acids have not heretofore been reported. Have the competitors of Vincent Christina & Co. overlooked these properties? Such claims do not appear in the advertisements of competing products. Vincent Christina & Co. seem to be striving for a reputation in making exaggerated and unwarranted claims for unscientific products. "Aminogen" and the claims made for it approach the acme in quackery. Isn't it unfortunate that the terms of the Federal Trade Commission Act do not permit adequate control over such advertisements when they appear in professional publications?

POLIOMYELITIS VIRUS IN SEWAGE

In 1939 Kling and his associates [1] estimated that the amount of poliomyelitis virus in the sewage from one section of Stockholm could be accounted for only on the assumption that 100 per cent of the people in that area were excretors of the virus or that the virus multiplied in sewage. He assumed that the virus grew in symbiosis with sewage micro-organisms, presumably with protozoa of the genus Bodo. Experimental evidence contrary to this assumption has been recently reported by Evans and his associates [2] of the University of Minnesota. Water samples were collected from local lakes, ponds, rivers and sewage during the poliomyelitis season. Protozoa were found in usual abundance. A pool of twelve strains of poliomyelitis virus was prepared as a 10 per cent suspension of monkey spinal cord. One volume of this mixture was added to 9 volumes of freshly collected water, giving an initial virus dilution of 1:100. Seven days later 1 volume of this culture was transferred to dishes containing 9 volumes of freshly collected water from the same source. Weekly serial transfers involving a tenfold dilution were thus carried out to a final dilution of 1:100,000. One week after the last transfer, specimens from each dish were treated with ether and injected intracerebrally into monkeys. Evidence of poliomyelitis failed to develop in any one of the inoculated animals. Similar tests were made with pure cultures of protozoa isolated from water or sewage. Each of these pure cultures failed to support the growth of poliomyelitis virus. Similar negative results have been reported by Jungeblut and his associates [3] of Columbia University. Jungeblut grew mixed bacterial flora from the human feces, pure cultures of sewage bacteria, as well as the commoner wild yeasts, fungi and protozoa. Each was grown in its respective optimal culture medium. Measured quantities of mouse adapted human poliomyelitis virus were added to each culture. After two to seven days' incubation transfers were made to a new culture medium in amounts constituting a further tenfold dilution. Serial passage was thus repeated for ten generations. Controls were run with the same virus in uninfected culture mediums. The microbial cultures and control dilution were tested at each passage by injections into mice. Data thus obtained showed that none of the bacteria, yeasts, molds or protozoa thus tested were capable of supporting poliomyelitis virus beyond their maintenance dilution in control tubes. American investigators therefore have been unable to find experimental evidence in support of the assumed multiplication of poliomyelitis virus in sewage. Kling's theory was presumably based on experimental or statistical errors.

1. Kling, C.; Olin, G.; Fahraeus, J., and Norlin, G.: Acta. med. Scandinav. **112**: 217, 249, 1942.
2. Evans, C. A., and Osterud, K. L.: Science **104**: 51 (Aug. 19) 1945.
3. Brutsaert, Paul; Jungeblut, C. W., and Knox, Alice: Proc. Soc. Exper. Biol. & Med. **61**: 265 (March) 1946.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Sept. 2, 1946

Hospitals Named As Streptomycin Depots

The Civilian Production Administration has announced the names of 1,652 hospitals in the United States and territories which will act as depots in the controlled distribution of streptomycin for civilian treatment, beginning September 1. Each depot hospital has been allotted a specific quantity of streptomycin available during the month and advised from what supplier it can buy its quota of the drug. Any hospital or physician may apply to the nearest depot hospital. The Office of Price Administration governs sales by suppliers and depot hospitals.

President Truman Lauds Work of American Federation of the Physically Handicapped

President Truman declared in a letter to the third biennial convention of the American Federation of the Physically Handicapped that the government and industry alike are obligated to help the nation's 1,500,000 handicapped persons to live normal, self-supporting lives. Mr. Truman said he was deeply impressed with statistics on the handicapped. The convention was urged to make long-range plans to get a fair share of the 60,000,000 jobs, and October 6 was named National Employ the Physically Handicapped Week. Paul A. Strachan was reelected president, Ralph Collins treasurer and Mildred Scott secretary.

Navy's New Repellent "NMRI-448" Released to the Public

Lieut. Comdr. Michael Pijoan of the U. S. Navy, who, with Lieut. L. A. Jachowski Jr., a navy entomologist, developed the insect repellent "NMRI-448," announces that the repellent is now available to the public. It is described as "six times more effective than anything else in the tropics and at least twice as good as anything else tested in temperate zones. The repellent is synthesized by adding hydrogen to organic compounds of the naphthol and diphenol groups, and it was given its name because it was the 448th of approximately 3,000 different compounds tested by the Naval Medical Research Institute.

Drivers Subjected to Medical Questionnaire

As the result of a series of fatal traffic accidents the District of Columbia commissioners, acting on recommendation of George E. Keneipp, the traffic director, have ordered all future applicants for driving permits to answer these nine questions: Have you ever had fainting or dizzy spells? Have you ever had a stroke of paralysis? Have you ever had a nervous breakdown? Have you had frequent headaches? Have you ever had disease or injury of the bones or joints? Do you drink alcoholic beverages? If so, to what extent? Do you take drugs regularly? Do you take insulin?

Dr. James A. Crabtree Named Deputy Surgeon General, U. S. Public Health Service

Surgeon General Thomas Parran of the U. S. Public Health Service has announced the appointment of Dr. James A. Crabtree as deputy surgeon general, effective September 1. Dr. Crabtree will relieve Dr. Warren F. Draper, who has been assigned to the American Red Cross as consultant. Dr. Crabtree has served as special assistant to Dr. Parran for the past year, and previously he was deputy director of health for the United Nations Relief and Rehabilitation Administration.

Naval Hospitals to Help Perform Separation Functions

The Navy has announced that its mass demobilization program ended on schedule September 1, with a total of 3,070,581 officer and enlisted personnel having been returned to civilian life since the surrender of Japan. The Navy has closed its twenty-nine formal separation centers, but twenty-five naval stations and thirty-five naval hospitals have been designated to perform separation functions for all personnel remaining on duty beyond September 1. The closing of the twenty-nine centers completed the demobilization of all reserves who have not volunteered to extend their periods of service, with the exception of certain Medical and Dental Corps officers who received all or part of their medical education at government expense and a small number of hospital corpsmen. Medical officers in this category are required to serve twenty-four months as commissioned officers, and dental officers thirty months. The Navy has transferred 800 Dental officers to the Army, and about 500 have been allotted to the Veterans Administration. These officers are still considered naval personnel but for administrative purposes are under the cognizance of the War Department. A comparatively few vital hospital corpsmen have been retained beyond September 1. These corpsmen will be processed for separation on completion of eighteen months' service. The services of the naval reserve male hospital corpsmen are urgently needed to provide care for more than 32,600 wounded patients in naval hospitals.

Emergency Measures Taken Against Epidemic of Diarrhea

Emergency measures have been adopted at a conference of federal, municipal and private hospital officials called to prevent spread of an epidemic of diarrhea which has stricken newborn infants at Freedmen's Hospital. Dr. Otis Anderson, chief of the hospital division, U. S. Public Health Service, has offered the loan of at least ten nurses from the staff of the U. S. Marine Hospital in Baltimore and other East Coast U. S. P. H. S. hospitals. The nurses will be assigned to Gallinger because this municipal hospital will absorb as many as possible of the District of Columbia maternity cases normally admitted to Freedmen's. All Washington hospitals handling maternity cases are to reduce the hospitalization period for normal mothers and babies.

Coming Medical Meetings

Annual Congress on Industrial Health, Boston, Sept. 30-Oct. 2. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 13-18. Dr. W. L. Benedict, 102 Second Ave., Rochester, Minn., Secretary.

American Association on Mental Deficiency, Montreal, Canada, Oct. 2-4. Dr. Neil A. Dayton, Mansfield Depot, Connecticut, Secretary.

American Diabetes Association, Toronto, Canada, Sept. 16-18. Dr. Cecil Striker, 630 Vine St., Cincinnati 2, Secretary.

American Hospital Association, Philadelphia, Sept. 30-Oct. 3. Mr. George P. Bugbee, 18 E. Division St., Chicago, Executive Secretary.

American Roentgen Ray Society, Cincinnati, Sept. 17-20. Dr. H. Dabney Kerr, University Hospital, Iowa City, Iowa, Secretary.

Association of Military Surgeons of the United States, Detroit, Oct. 9-11. Col. James M. Phalen, Army Medical Museum, Washington 25, D. C., Secretary.

Colorado State Medical Society, Estes Park, Sept. 11-14. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.

District of Columbia, Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M Street N. W., Washington 6, Secretary.

International College of Surgeons, United States Chapter, Detroit, Oct. 21-23. Dr. Louis J. Gariepy, 16401 Grand River Ave., Detroit 27, Secretary.

Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 15-18. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.

Kentucky State Medical Association, Paducah, Sept. 30-Oct. 3. Dr. P. E. Blackerby, 620 S. Third St., Louisville, Secretary.

Michigan State Medical Society, Detroit, Sept. 25-27. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mississippi Valley Medical Society, St. Louis, Sept. 25-27. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Nevada State Medical Association, Las Vegas, Oct. 4-5. Dr. Moreton J. Thorpe, 17 N. Virginia St., Reno, Secretary.

North Pacific Pediatric Society, Vancouver, B. C., Oct. 19. Dr. A. B. Johnson, Cobb Bldg., Seattle 1, Secretary.

Oregon State Medical Society, Gearhart, Sept. 26-28. Dr. Thomas S. Saunders, 1020 S.W. Taylor St., Portland 5, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 7-10. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh 22, Secretary.

Southern Psychiatric Association, Richmond, Va., Oct. 7-8. Dr. Newdigate M. Owensby, 384 Peachtree St. N.E., Atlanta, Ga., Secretary.

Vermont State Medical Society, Burlington, Oct. 2-4. Dr. Benjamin F. Cook, 128 Merchants Row, Rutland, Secretary.

Virginia, Medical Society of, Virginia Beach, Oct. 14-16. Miss Agnes V. Edwards, 1200 East Clay St., Richmond 19, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Oct. 7-9. Mr. Charles H. Crownhart, 110 E. Main St., Madison 3, Secretary.

GOVERNMENT SERVICES

ARMY

ARMY TO RECALL 1,000 NURSES AND 100 MEDICAL ADMINISTRATIVE OFFICERS

The War Department recently announced that 1,000 former Army Nurse Corps officers and 100 additional medical administrative corps officers would be recalled. Major Gen. Norman T. Kirk, Surgeon General of the Army, stated that the recall of officers to active duty on a voluntary basis was necessary to insure the best possible care to some 90,000 patients remaining in army hospitals throughout the world.

Other corps in the Medical Department which have been authorized recall quotas are the Medical Corps 100, Dental Corps 100, Sanitary Corps 50, Veterinary Corps 25 and dietitians 50. The first recall quota of 200 Reserve and National Guard officers authorized for the Medical Administrative Corps last spring has been met.

In general, all officers who return to active duty must qualify for general duty and be available for overseas duty. They will replace personnel eligible for discharge. As former officers they must have an efficiency rating score of at least 35 to return in company grade and 40 points to return in field grade.

Nurses who come back into service will be given their choice of two categories. They may don their uniforms again to serve until relieved at the convenience of the government or for two years. Medical Administrative Corps officers may sign up for twelve, eighteen or twenty-four months or for an unlimited length of time.

Former army nurses have evidenced great interest in returning to active duty. Already about 1,500 have notified the War Department that they are ready to trade civilian life for further military duty. They will not be considered if they are married or have dependents under 14 years of age.

All applicants desiring recall for extended duty should obtain application blanks from the Adjutant General, Washington 25, D. C., or any army recruiting stations, camps, posts or stations.

COLONEL RUFUS L. HOLT TO SUCCEED BRIGADIER GENERAL CALLENDER

Col. Rufus L. Holt, formerly acting commandant and secretary of the professional service school of the Army Medical Department, was recently appointed commandant to succeed Brig. Gen. George E. Callender, who recently retired after thirty-three years of service. General Callender, who is now on terminal leave, will become a special consultant to the Surgeon General.

ARMY SURGEONS HOLD TWO DAY CONFERENCE

Army surgeons, commanding generals of army medical centers and surgeons of major forces recently held a two day conference in the Pentagon Building, Washington, D. C., in which postwar problems of the Army Medical Department were discussed.

Major Gen. Norman T. Kirk, Surgeon General of the Army, presided at a reception and dinner for visiting medical officers at the Army Medical Center.

AVIATION MEDICAL EXAMINERS GRADUATE

Graduation exercises were recently held for a class of thirty-nine medical officers who have successfully completed the Aviation Medical Examiners' course at the AAF School of Aviation Medicine, Randolph Field, Texas. Col. Harry G. Armstrong, MC, is commandant of the school.

ARMY AWARDS AND COMMENDATIONS

Major Samuel M. Bloom

The Bronze Star was recently awarded to Major Samuel M. Bloom, Clifton Forge, Va., "for meritorious achievement in connection with military operations against the enemy in the Philippine Islands from June 8, 1942 to Oct. 14, 1944. Serving with a hospital in Military Prison Camp No. 1, Cabanatuan, Philippine Islands, Major Bloom rendered outstanding service to his fellow soldiers over a prolonged period despite the most difficult conditions. During the first few months the death rate assumed alarming proportions, owing to a diphtheria epidemic as well as to frequent outbreaks of dysentery, malaria, beriberi and pneumonia, yet Major Bloom repeatedly exposed himself to the ravages of these diseases and by his unflinching loyalty to the patients prevented what might have become a wholesale decimation of American prisoners of war. Handicapped by a completely inadequate medicinal supply and starvation rations, he worked untiringly and faithfully to curtail the physical and mental deterioration which was becoming apparent among the diseased prisoners. He courageously continued to carry out his assigned duties while suffering from hunger, illness and exhaustion. By his dauntless spirit of self sacrifice, untiring devotion to duty and unwavering courage in the face of increasingly disheartening conditions, Major Bloom was instrumental in saving the lives of many comrades, and his unselfish service exemplified the highest traditions of the United States Army Medical Department." Dr. Bloom graduated from New York University College of Medicine in 1935 and entered the service May 1, 1942.

Lieutenant Colonel George Ensley Moore

Lieut. Col. George E. Moore, Fulton, Mo., was recently awarded the Legion of Merit. The citation accompanying the award explained that "as psychiatric consultant to the surgeon, Second Air Force, during the period from May 1944 to October 1945, Colonel Moore instigated a system of personal consultation units for the promulgation of effective mental hygiene within the command. Under his supervision a mental hygiene program was organized and developed during the most critical period of the Heavy and Very Heavy Bombardment Training mission, a period during which the mental stamina and composure of all personnel was of utmost importance." Dr. Moore graduated from the University of Illinois School of Medicine in 1939 and entered the service Oct. 1, 1940.

Captain Vincent E. Fischer

The Army Commendation Medal was recently awarded to Capt. Vincent E. Fischer, Rochester, N. Y., "for his superior direction as medical officer in charge of the separation center at Patterson Field, Ohio." Dr. Fischer graduated from the University of Michigan Medical School, Ann Arbor, in 1931 and entered the service Jan. 28, 1944.

Major William A. Schonfeld

Major William A. Schonfeld, New York, was recently awarded the Ribbon of Commendation for his work as chief of the Psychiatric Rehabilitation Service of the 160th General Hospital. Dr. Schonfeld graduated from New York University College of Medicine, New York, in 1931 and entered the service Oct. 9, 1942.

Major Albert F. Stein

The Bronze Star was recently awarded to Major Albert F. Stein, Chicago. The citation accompanying the award emphasized Major Stein's "meritorious service in connection with military operations against an enemy of the United States from May 4, 1944 to Jan. 27, 1945. As commanding officer of the —— Medical Dispensary (Aviation) and base surgeon of an army air base in China, Major Stein demonstrated superior

skill, a high degree of responsibility and initiative in the performance of his duties. During this period he was responsible for medical service to all personnel of the Bomb Group and Forward Echelon Headquarters. In addition, he coordinated with Bomb Group medical personnel at mission time, furnishing medical service, personnel and equipment for all emergencies at take-off and return from combat missions. As a result of conscientious work by Major Stein and his organization, these functions were most efficiently performed. As base surgeon Major Stein was responsible for ground rescue work in the event of aircraft accidents and was a member of the group which participated in many such local rescue missions. The terrain over which it was necessary to transport the injured personnel and medical equipment was very rugged, and in many instances slippery rice paddy paths were the only means of approach to the scene of the accident. Major Stein demonstrated superior skill in the handling of emergency cases as well as courage in the face of hazards encountered, such as exploding ammunition, burning gasoline and in one instance unexploded bombs. Major Stein's efforts and example are in keeping with the highest traditions of the Army Air Forces and reflect great credit on himself and the —— Bomber Command." Dr. Stein graduated from the University of Illinois College of Medicine in 1936 and entered the service Feb. 1, 1941.

VETERANS ADMINISTRATION

MEDICINE IN THE SERVICES AND VETERANS' AFFAIRS

The Veterans Administration announces through the office of the chief medical director, Dr. Paul R. Hawley, that arrangements have now been completed with Wayne University College of Medicine, Detroit, to accept applications for postgraduate training in neuropsychiatry at the Veterans Administration Hospital, Dearborn, Mich., and mental hygiene outpatient facilities in Detroit. These residencies are open to veterans as a first priority, but others may apply and will be considered on their individual merits provided there are more vacancies than can be filled by veterans. Communications concerning these openings should be addressed to Professor John R. Dorsey, Professor of Psychiatry, Wayne University Medical School, Detroit.

APPOINTMENTS

Dr. Joseph Krimsky, Huntington, W. Va., recently accepted an appointment with the Veterans Administration as chief of the eye, ear, nose and throat service in the Regional Office at Huntington, W. Va.

MISCELLANEOUS

DISPOSAL OF SURPLUS MEDICAL AND SURGICAL INSTRUMENTS

Appreciation of the "extremely competent administration of the disposal of surplus medical and surgical instruments and supplies by the War Assets Administration" was expressed by the Surgical Instruments Manufacturers Industry Advisory Committee at a meeting with WAA officials.

The committee, representing manufacturers of surgical instruments throughout the country, recommended a central point of sale instead of the present regional selling program for the following reasons: (*a*) special nature of the items; (*b*) economy of distribution which will result in larger return to the government; (*c*) speed of distribution to accomplish better the purpose of the act and regulations with respect to distribution through normal channels of trade; (*d*) the fact that the instrument industry is located largely in a few areas and not in all parts of the country.

Opposition to the disposal of medical and surgical equipment at site sales was voiced by members of the committee who felt that, where public health is involved, special handling of technical property by qualified personnel is necessary. The committee also felt that the site method of sale would retard the disposition of these highly specialized items.

The committee endorsed a plan to set aside short supply items for veteran doctors and dentists for their own professional use and not for resale.

The meeting was conducted by Lawrence F. LaChey, chief of the Surgical Professional and Scientific Branch of the War Assets Administration.

AWARDS AND COMMENDATIONS

Dr. John Minor

Dr. John Minor, Washington, D. C., was recently awarded the Legion of Merit by Major Gen. Norman T. Kirk, Surgeon General of the Army. Dr. Minor, former colonel in the Medical Corps, was decorated for his work when "as medical consultant to the Surgeon of the Third Service Command from December 1944 to December 1945 he raised the professional standards of the various hospitals of this command to a high degree of efficiency. By this leadership and exceptional professional ability he rendered outstanding services, thereby reflecting credit on himself and the military service."

Dr. Minor also served as chief of the medical service, Woodrow Wilson General Hospital, Staunton, Va., while in uniform. He was named as medical consultant to the Secretary of War through the Surgeon General. Dr. Minor graduated from Harvard Medical School, Boston, in 1919.

Dr. Charles Walter Clarke

The War Department recently awarded a certificate of appreciation for patriotic service to Dr. Walter Clarke, executive director of the American Social Hygiene Association, New York, for his wartime service as consultant to the Secretary of War in venereal disease control and tropical medicine.

The certificate is in special recognition of Dr. Clarke's services in delivering lectures on venereal disease educational methods and prostitution control to classes at the Army Medical School. Dr. Clarke's other wartime duties included membership on the subcommittee on venereal disease of the National Research Council, overall wartime research agency through which the government coordinated scientific projects. The Council controlled the civilian distribution of penicillin during the war period.

Dr. Clarke graduated from the University of Edinburgh Faculty of Medicine in 1928.

MEDICAL AND SURGICAL RELIEF COMMITTEE

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York 17, recently received an appeal from the Missionary Canonesses of St. Augustine in New York for medical instruments and drugs to be used in the establishment of a hospital at Nighis, Mongolia. In describing the vital need for this hospital, Mother Mary Franciscus, who is a physician, explained that patients in this area now have to travel six or seven days by car to reach the nearest medical center. Dr. Franciscus, speaking for the mission, said that it is intended to make the hospital a real charitable institution open to the poorest. The list of items required includes ergotine, penicillin, mercurochrome, vitamins, baby foods, medical kits, surgical instruments and operating room and general hospital accessories.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Arkansas

Bowman, Milton B.....Hot Springs
Chesnutt, Charles R. Jr.....Little Rock
Johnston, Robert H.....Clarksville
Levy, Jerome S.....Little Rock
Norton, Joseph A.....Pine Bluff
Smith, Reginald E.....Reyno
Wood, Turner A.....Little Rock

California

Abrahm, Paul M.....San Francisco
Ahl, Gustav A.....Vallejo
Bartlett, Robert E.....Los Angeles
Bedri, Marcel R.....Los Angeles
Berendsen, Raymond G.....Imola
Blotky, Myron J.....West Los Angeles
Blume, Frederick E.....Oakland
Bramble, Earl G.....Santa Ana
Browning, Donald C.....Los Angeles
Bruner, Charles W.....National City
Campbell, George M.....Lynwood
Fink, Morris L.....Los Angeles
Fong, Edward E.....Oakland
Greenson, Ralph R.....Los Angeles
Harris, Arthur P.....San Diego
Holmes, Kendall B.....Fresno
Houck, George H.....Los Angeles
Hurlbut, Wilbur B.....San Mateo
Ingala, Anthony.....Los Angeles
Jamison, Ellis T.....Porterville
Jetton, James A.....Fall Brook
Kahn, Harold.....Redding
Kahn, Jacob P.....San Francisco
Keating, William E.....Los Angeles
Lawler, Thomas G.....San Francisco
Meier, August W.....San Francisco
Meyer, Paul O.....West Los Angeles
Michelson, George A.....San Francisco
Miller, Albert J.....Azusa
Miller, Edward R.....San Diego
Movitt, Eli R.....San Francisco
Nelson, Roland C.....Beverly Hills
Page, Winthrop R.....Santa Monica
Peha, Lewis J.....Los Angeles
Perrie, Samuel.....Long Beach
Reavis, James C.....Berkeley
Reynolds, Joseph W.....Dunsmuir
Roberts, John F.....Los Angeles
Roberts, Wyman J.....Huntington Park
Rosenberger, Homer G. Jr.....Whittier
Ryan, John F.....Los Angeles
Sherman, Max A.....Los Angeles
Simrall, James O. H.....Los Angeles
Sperry, Arthur DeF. Jr.....Long Beach
Spickerman, H. DeW.....Santa Monica
Spohn, Albert H.....Fairfield
Steiner, Albert A.....Los Angeles
Strauss, Bernard.....San Francisco
Vaughan, John E.....Bakersfield
West, Francis E.....San Diego

Connecticut

Barney, Walter E.....Milford
Biehn Donald MacK. F.....Fairfield
Blaney, Lamson.....Cannondale
Bowen, Joseph J.....Waterbury
Brand, Elliott S.....New Haven
Castiglione, Frank M.....New Haven
Clarke, Clement C.....Woodbridge
Gendel, Benjamin R.....New Haven
Harris, Louis D.....Hartford
Heublein, Gilbert W.....Hartford
King, Lester S.....Newtown
Kramer, Louis S.....New Haven
Kummer, Jerome M.....Wallingford
Lacava, John J.....New Britain
Michel, Lawrence I.....New Haven
Nagourney, David.....Bridgeport
Norton, Edward A.....New Britain
Saltzman, Jacob.....New Haven
Sargent, Frederick K.....North Haven
Taft, Edgar B.....New Haven
Tinkess, Donald E.....Greenwich

Delaware

Hegarty, William M. Jr.....Wilmington
Latzo, John J.....Wilmington
Schreader, Charles J.....Newark
Van Valkenburgh, G. M.....Georgetown
Warren, Thomas N.....Wilmington
Wells, Fullerton B.....Wilmington
Wintrup, Charles K.....Wilmington

Florida

Beach, George P.....Jacksonville
Bostwick, Jackson L.....Jacksonville
Burton, Joseph M.....Miami
Cook, Thomas McB. Jr.....Palm Beach
Frankfurth, Vincent L.....Orlando
Hood, Douglas W.....St. Petersburg
Mathers, John F.....Orlando

Georgia

Bush, Oliver F.....Columbus
Johnson, Hansford F.....Macon
Kassenwitz, Julian.....Fitzgerald
Land, Polk S.....Columbus
Leaphart, Edward C.....Augusta
Lee, Lawrence Jr.....Savannah
Rosenberg, Albert A.....Swainsboro
Rudder, Fred F.....Atlanta
Stelling, Frank H. III.....Augusta
Thompson, David O.....Atlanta
Thurston, John A.....Atlanta

Idaho

Baldeck, Eugene J.....Lewiston
Brooking, Emil W.....Lewiston
Gavin, Clamor H.....Wendell
Hartvigsen, Hyrum D.....Pocatello
Hawley, James H.....Boise
Kimelman, Nathan.....Boise
Mangum, Thomas E. Jr.....Nampa
Patton, Halford E.....St. Maries
Ritchie, John W.....Hagerman
Rosevear, Henry J.....Glenns Ferry
Rothman, Benjamin G.....Boise
Trayner, Hampton H.....Idaho Falls

Illinois

Anderson, Donald H.....Greenville
Ascher, John P.....Chicago
Barnum, David R.....Evanston
Beadenkopf, William G.....Chicago
Brouse, Ivan E.....Jacksonville
Cohn, Robert D.....Chicago
Cordua, Harney M. Jr.....Chicago
Del Beccaro, Edward J.....Chicago
Demski, Casimir.....Chicago
Epstein, Sidney E.....Chicago
Evans, Morton I.....Chicago
Farmans, Michael S.....Chicago
Feinberg, Harold M.....Chicago
France, George W.....Chicago
Gifford, Sanford R. Jr.....Chicago
Gomberg, Bernard.....Chicago
Harris, Mervin R.....Wilmington
Harris Zigmore.....Chicago
Hart, William H.....Peoria
Holub, Louis A.....Cicero
Jacobs, Herbert M.....Sterling
Jesacher, Andrew J.....Chicago
Karraker, Richard W.....Chicago
Katzenstein, Friedrich C.....Salem
Keller, John E.....Springfield
Kelso, Thomas W. Jr.....Granite City
Kleiman, David.....Evanston
Kligerman, Charles.....Chicago
Kramer, Paul.....Chicago
Kuznetsky, Charles A.....Chicago
Lettvin, Jerome Y.....Chicago
Lewinnek, Walter.....Mason City
Mangan, Frank P.....Cicero
Marsh, Henry O. Jr.....Maywood
Mayfield, Ike J.....Bluffs
Melone, Horatio R.....Chicago
Merideth, Howard W.....Chicago

Illinois—Continued

Miller, Carl.....Chicago
Morris, Harold R.....Chicago
Murphy, Edward M.....Chicago
Naney, Alva P. Jr.....Flora
Nebrensky, Joseph A.....Berwyn
Needles, Joseph H.....Belleville
Olsman, Louis.....Chicago
Parrilli, William F.....Chicago
Pick, John F.....Chicago
Pinney, James C.....Chicago
Popper, Hans.....Chicago
Quamme, Roy K.....Broadview
Reznick, Bronislava Z.....Chicago
Ritter, Israel I.....Chicago
Roberts, George M.....Chicago
Sattler, Chester.....Pecatonica
Schultz, Alfred G.....Jacksonville
Scott, Ernest W.....Chicago
Seltzer, Alvin.....Hillsboro
Smith, Sidney.....Sheridan
Stein, Albert F.....Chicago
Steuber, William F.....Elmhurst
Tannehill, Ellsworth H.....Chicago
Tedesco, Nunzio J.....Chicago
Tetrev, Jaroslav.....Berwyn
Wahl, Frederick J.....Winnetka
Walsh, James A.....Peoria
Wells, Gideon R.....Chicago
Whitlock, Richard F.....Alton
Wiebmer, Donald J.....Quincy
Wilson, Earle E.....Oak Park
Zaluga, Henry J.....Chicago
Zelik, William B.....Chicago

Indiana

Borum, Bruce H.....Valparaiso
Brody, Arthur D.....East Chicago
Dainko, Alfred J.....Whiting
Hansell, Robert M.....Indianapolis
Himebaugh, Gilbert J.....Speed
Jewett, Jim S.....Carmel
Jordan, Leo E.....Lynn
Kistler, James J.....La Porte
Latshaw, Charles W.....Carlisle
Macy, George W.....Columbus
Pugh, Willis L.....Evansville
Silverman, Norman M.....Riley
Smith, Gloster J.....Kokomo
Stone, Alvin T.....Indianapolis
Thompson, William R.....Winamac
Whitcomb, Roger F.....Knightstown
Witkowski, Leon J.....La Porte

Iowa

Bickley, John W.....Waterloo
Bunge, Raymond G.....Iowa City
Colbert, Lawrence D.....Danbury
Dunlap, John C.....Cedar Falls
Dwankoski, Carl.....Mount Pleasant
Johnson, Merton A.....Des Moines
Krausharr, Otto F.....Iowa City
Morgan, Paul W.....Mason City
Rolfs, Floyd O.....Parkersburg
Schissel, Donald J.....Iowa City
Swander, Jack E.....Boone

Kansas

Barker, Henry D.....Junction City
Boyd, Spencer H.....Topeka
Buehler, Carl T. Jr.....Halstead
Delp, Mahlon H.....Kansas City
Dietrich, Frederick G.....Broughton
Gilbert, John H.....Kansas City
James, Otis E. Jr.....Kinsley
Martin, Oliver L.....Baxter Springs
Miller, William R.....Lyons
Noltensmeyer, Milton H.....Kansas City
Richert, Forrest E.....Wichita
Schneider, Eldee L.....Dodge City
Weaver, Jack D.....Wichita
White, Thaddeus H.....Manhattan

PHYSICIANS SEPARATED FROM SERVICE

Kentucky

Adkins, Hezekiah.....Louisville
Allen, John D. Jr.....Louisville
Bradford, Vance A.....Bluejacket
Bryant, William H.....Glasgow
Byrne, Walter R.....Russellville
Clarkson, Samuel C.....Lebanon
Duncan, George E.....Russellville
Dye, William W.....Ewing
Dyer, Sydney G.....Carrollton
Ellis, Bert H.....Danville
Esbin, Leo.....Everts
Forrester, Alexander MacH....Louisville
Griswold, Alexander V.....Louisville
Harris, Martin J.....Louisville
Harting, Charles W.....Kevil
Howland, Bernard U.....Louisville
Kato, Hideo H.....Louisville
Keeton, James M.....Ashland
Kimbel, Esten S.....St. Matthews
Lacy, Clinton McC.....Blackey
Lipscomb, William N.....Lexington
Mardis, Richard E.....Louisville
Moosnick, Franklin B.....Versailles
Pierce, Warren V.....Fort Thomas
Robinson, William C.....Lexington
Schultz, Arthur F.....Fort Thomas
Sonne, John J.....Louisville
Swartz, Herbert P.....Lexington
Young, Victor H.....Lexington

Louisiana

Barham, Garnett E.....Lake Charles
Bick, John W. Jr.....New Orleans
Donahue, Michael J. Jr....Baton Rouge
Gilbert, Norman S. Jr.....St. Bernard
Hernandez, Raphael S.....Duson
Lynch, Mercer G.....New Orleans
Moseley, Jack M.....Monroe
Newton, James S.....New Orleans
Simkin, Samuel.....New Orleans
Swearingen, James P.....Shreveport
Taormina, Santo E.....New Orleans
Treadwell, Willard V.....New Orleans

Maine

Beliveau, Bertrand A.....Lewiston
Chasse, Leo R.....Lewiston
Davies, Lloyd G.....Bath
Good, Philip G.....Waterville
Harkins, Michael J.....Lewiston
Hill, Allison K.....Bangor
Howard, George C.....Guilford
Lesieur, Louis C.....Saco
Marsh, Burton S.....W. Greenville Jct.
O'Connell, George B. Jr.....Lewiston
Peirce, Edmund C. II.....Hancock Point
Perkins, Hanson T.....Togus
Reynolds, John F.....Waterville
Thompson, George E.....Portland
Wasgatt, Wesley N.....Rockland

Massachusetts

Abbott, Richard N.....West Newton
Arnold, Jesse O.....Worcester
Barkin, Robert E.....Brookline
Boc, Stanley F.....Gardner
Burden, Charles N.....Taunton
Byrne, Gregory F.....New Bedford
Collins, William J.....Salem
Costanza, Fred P.....Quincy
DerHagopian, Ardashes P.....Chelsea
Foster, Frank P.....Newton
Garland, Donald McR....East Braintree
Golub, Benjamin S.....Dorchester
Gould, Maxwell.....Worcester
Hammer, Joseph.....Wellesley
Holden, Robert B.....Stoneham
Holzman, Daniel.....Boston
Long, Arthur P.....Needham
McKinnis, Peter P.....Lawrence
McNulty, John J.....Boston
Marcus, Israel.....Somerville
Meyers, John.....Worcester
Moline, Robert E.....Springfield

Massachusetts—Continued

Newman, Jacob N.....Cambridge
O'Leary, James J. Jr.....Jamaica Plain
Orris, Israel.....Lynn
Palmieri, Salvatore P.....Boston
Quinn, Edmund P.....Medford
Rothschild, David.....Worcester
Sandmeyer, John A.....Brookline
Shea, Daniel F.....Quincy
Siegel, Henry W.....Dorchester
Slobodkin, Eliot I.....Brookline
Spritz, Benjamin.....Belmont
Sweetser, Elliott H.....Malden
Urmy, Thomas Van O.....Brookline
Weinstein, Sol.....Northampton
Wildman, Chaim J.....Pittsfield

Michigan

Barnes, Milford E. Jr.....Detroit
Chamberlain, Ray W.....Shepherd
Collins, James E.....Detroit
Geib, Wayne A.....Grosse Pointe Park
Hamburger, Albert C.....Detroit
Hayes, Robert E.....Grand Rapids
Holmes, Samuel G.....Lansing
Jury, Donald B.....Detroit
Kass, Arnold.....Detroit
Kazdan, Morris.....Allen Park
Klein, Alfred A.....Detroit
Lake, Edward C.....Jackson
Lyons, James W. Jr.....Beulah
McInerney, Thomas A.....Escanaba
Martin, Hubert G.....Rapid City
Monto, Raymond W.....Detroit
Raiford, Frank P.....Detroit
Russell, Stuart W.....Kalamazoo
Salon, Dayton D.....Ann Arbor
Scavarda, Charles J.....Flint
Smith, Robert B.....Grand Rapids
Spitzer, Henry.....Detroit
Stocker, Marvin L.....Detroit
Swanson, Robert G.....Grosse Pointe
Taurence, William H.....Wyandotte
Touzeau, Arthur T.....Detroit
Van Auken, Edward W.....Big Rapids
Volderauer, John C.....Kalamazoo
Wempe, George R.....Detroit
Willoughby, Gordon L.....Flint
Wynn, George H.....Adrian

Mississippi

Brumby, Paul B.....Lexington
Dickson, Nolan S.....Aberdeen
Head, Robert G.....Mendenhall
Simpson, Joel A. Jr.....Wiggins
Smith, Oswald G.....Mound Bayou
Turnage, Johnson L.....Kosciusko
Wiener, Isadore D.....Tutwiler

Missouri

Flynn, George W.....Clayton
Klinge, Frederick W.....St. Louis
Koch, Robert E.....Clayton
Orenstein, Joseph M.....University City
Ziegler, Newell R.....Columbia

Nebraska

Adams, Burnell H.....Nehawka
Bivens, William S.....Omaha
Bushman, Louis B. Jr.....Omaha
Clarke, Harry D.....Seward
Freed, Albert E.....Omaha
Garner, Fay L.....Seward
Hamel, John K.....Tecumseh
Henrich, Leo C.....Omaha
Horak, Oliver A.....Dodge
Kavan, Lucien C.....Clarkson
McGreer, John T. Jr.....Fremont
May, Ivan A.....Crete
Miller, Charles V.....Omaha
Musfelt, William S.....Ohiowa
Rider, Harmon E.....Omaha
Scott, Paul M.....Cozad
Shaw, Wilfred L.....Hastings

New Jersey

Brundage, Robert H.....West Orange
Davis, Elbert V.....Vincentown
Driscoll, Raymond S.....Bayonne
Farmer, Woodard E.....Asbury
Fishbein, Elliot.....Paterson
Frank, Herman I.....Bayonne
Friery, John F.....Bergenfield
Giacona, Joseph F.....Union
Heine, William I.....Camden
Horowitz, Robert.....Jersey City
Howe, Edward G.....Passaic
Kennedy, William McL.....Verona
Kraemer, Louis B.....Newark
Kuperman, Jesse P.....Jersey City
Kushner, Alexander.....Rahway
Lehmus, Harold J.....Allendale
Lowenstein, Ernest C.....Rahway
Mason, John T. Jr.....South Orange
Morgan, Ralph E.....Haddonfield
Murray, Edward F.....Jersey City
Nussbaum, Joseph.....Elizabeth
Olinger, Mervin G.....Bloomfield
Pariser, Herbert L.....Passaic
Pepe, Salvatore A.....Trenton
Rosner, Albert.....Camden
Shapiro, Joseph S.....Paterson
Skinner, Charles E. Jr.....Madison
Skowron, Charles A. R....Collingswood
Solworth, Lee.....Englewood
Sprague, Grover J.....Ramsey
Sprofkin, Bertram E.....Paterson
Tilles, Samuel.....Seaside Heights
Tokar, Vincent R.....Passaic
Tolomeo, Martin E.....Bound Brook
Tomec, Otto C.....Trenton
Whigham, Herbert H.....East Orange
Wurtzel, Samuel B.....Newark
Yoskowitz, Benjamin.....Paterson
Zeidman, Irving.....Camden
Zimmer, Louis E.....Newark

New York

Abrahams, Harry D.....Brooklyn
Alagna, Daniel T...Richmond Hill, L. I.
Ansanelli, Francis C.....New York
Augenfeld, Robert.....Yonkers
Baker, Theodore Jr.....Niagara Falls
Barcham, Julius.....New York
Bard, Donald G. Jr.....Pleasantville
Beekman, Robert S.....New York
Berkowitz, Sidney S.....New York
Bernstein, Sidney A.....Brooklyn
Bilchick, Edwin B.....New York
Bingham, Robert.....New York
Bloor, Robert J.....Rochester
Blum, Edward B.....Woodhaven, L. I.
Booth, Carl B.....Albany
Bowers, Ralph F.....New York
Bowman, Robert L.....Bronx
Braunstein, William.....New York
Bregande, Samuel C.....Syracuse
Brick, Harry.....Bronx
Brune, Joseph B.....New York
Bryla, Joseph J.....Utica
Budetti, Joseph A.....New York
Burch, Reynold E.....New York
Burr, Albert H.....New York
Busman, Leonard.....Bronx
Button, Lucius L.....Rochester
Calcagno, Joseph J.....Bellerose Manor
Campagna, Angelo.....Brooklyn
Candela, Lester J.....Brooklyn
Caracappa, John M.....Brooklyn
Catalano, Joseph J.....Kings Park, L. I.
Cerulli, Frank.....Queens Village
Chambers, William N.....New York
Chin, Henry.....Corona
Collins, Ralph T.....Brentwood, L. I.
Collins, Robert J.....Eggertsville
Cosentino, Anthony J.....Staten Island
Crosbie, Stanley B.....Poughkeepsie
Crossen, Richard W.....Wassaic
Crump, Frederic M.....Gloversville
Cunningham, George F.....Brooklyn

PHYSICIANS SEPARATED FROM SERVICE

New York—Continued

Dean, William H.....Sunnyside, L. I.
Diamond, Jess.....Bronx
Dickar, Lewis.....Brooklyn
DiGregorio, Arnold G.....Bronx
Dilluvio, Vito W. A.....New York
Dorfman, Milton.....Brooklyn
Dowling, Charles V.....Jamaica
Duckman, Jerome.....Brooklyn
Edelstein, John E.....Brentwood
Edmonstone, William M.....Rochester
Epstein, David.....Brooklyn
Epstein, Joseph.....Brooklyn
Faber, John H.....New York
Feinberg, Max.....Mount Vernon
Feingold, Charles R.....Brooklyn
Feinman, Max L.....Brooklyn
Feldman, Abraham L.....Mount Vernon
Feldman, Robert L...Belle Harbor, L. I.
Ferraro, Louis R.....Bronx
Fox, Theodore W.....Albany
Frank, Leonard C.....New York
Frankel, Leo P.....New York
Franklin, Robert B.....Buffalo
Fraser, Charles G.....Rochester
Freudenheim, Abraham Z..Watkins Glen
Fried, Emil E.....Long Island City
Friedman, Julius R.....Yonkers
Gais, Elmer S.....New York
Gephart, Francis T.....Bronxville
Glusker, David S.....Yonkers
Goldberg, Harry.....Bronx
Goldberg, Harry.....Brooklyn
Greenwood, Murray A.....New York
Halleran, Leo B.....Flushing
Harris, Jerome S.....New York
Harris, Jonathan L.....New York
Harris, Melvin W.....New York
Harris, William A.....Brooklyn
Hazard, John D.....Saratoga Springs
Herr, Bayard S. Jr.....Amsterdam
Hoch, Frederic L.....New York
Hochman, David.....Brooklyn
Horne, Herbert W. Jr.....Cooperstown
Hyman, David.....Bronx
Ingham, Donald W.....Schuylerville
Isaacs, Ivan.....Brooklyn
Isenberg, Stanley A.....New York
Jailer, Joseph W.....New York
Jellinger, David L.....Bronx
Kahane, Abraham.....New York
Kaiser, Alexander.....Middle Village
Kamholtz, Theodore.....Brooklyn
Karp, Harrison M.....Mechanicsville
Kassman, Noah J.....Brooklyn
Kaufman, Harry H.....New York
Kelly, Francis W...Richmond Hill, L. I.
Kibler, Raymond S.....Eggertsville
Kiss, Edwin A.....Jackson Heights
Klein, Arthur.....Jamaica
Kleinberg, Morris.....New York
Kleinman, Abraham I.....Bayside, L. I.
Kuczmarski, Leo N.....Buffalo
Kugel, Victor H.....New York
Kunkle, Edward C.....Mount Vernon
Lascelle, Philip H.....New York
Latter, Irving L.....New York
Lattimer, John K.....New York
Leiby, Rowland W. Jr.....Ithaca
Leichtling, Julius J.....Brooklyn
Leighton, Benjamin...Long Beach, L. I.
Lerman, Maurice M.....Spring Valley
Levine, Bernard D.....Brooklyn
Levine, Morris.....Bronx
Levinson, Macy F.....Bronx
Lief, Victor F.....Far Rockaway
Linder, Jerome M.....Brooklyn
Lipton, William.....Brooklyn
Loehfelm, George F.....Brooklyn
Lo Presto, Frank.....Corona, L. I.
Lowenstein, Edgar.....Brooklyn
Lowenstein, Harold H.....Brooklyn
McGrath, John F. Jr.....New York
McLaughlin, William J.....Brooklyn

New York—Continued

Mac Lean, Lester.....Rochester
Mahoney, Jesse W.....Mount Vernon
Major, Edgar M.....New York
Malinash, Louis.....Brooklyn
Manasse, Konrad.....New York
Mark, Mortimer L.....Bronx
Markowitz, Bernard R.....Brooklyn
Marsh, Memoir R.....Brooklyn
Martin, Rudolph J.....Ticonderoga
Masiello, Serafino R.....Bronx
Medl, William T.....New York
Milazzo, Pasquale S.....Brooklyn
Mitchell, Michal.....Woodside, L. I.
Mitchell, Raymond W. Jr.....Buffalo
Morgenstern, Mates.....New York
Murphy, Eusebius J.....Bronx
Nagler, Simon H.....Brooklyn
Nardacci, Anthony W.....Albany
Nelson, Samuel.....Bronx
Noto, Salvatore L.....Brooklyn
Nussbaum, Carl C.....New York
Parker, Jesse S.....Glens Falls
Pechan, Bernard W.....Brooklyn
Perillo, Peter A.....New York
Pinkus, Louis R.....Bronx
Port, Murray.....New York
Putterman, Allan.....Jamaica
Richfield, Daniel F.....New York
Rochelson, Sidney.....New York
Rosen, George M.....Brooklyn
Ryan, Francis W.....Valhalla
Sanger, Maury D.....Brooklyn
Sashin, David.....New York
Saunders, Richard L.....Buffalo
Scaline, Salvatore.....Jamaica, L. I.
Scanlan, Robert L.....Brooklyn
Schreiber, Herbert.....New York
Schwartz, Irving L.....Long Island City
Schwartz, Solomon.....Flushing
Shiffman, Morris.....New York
Silverman, Jacob J...W. Brighton, S. I.
Simon, Bernard E.....New York
Smadel, Joseph E.....Malba, L. I.
Smith, Ralph E.....Buffalo
Soifer, Nathaniel.....New York
Spaeth, Frank.....Syracuse
Stanbury, Ralph G.....Akron
Stein, Max H.....Brooklyn
Stern, Marvin.....Brooklyn
Stern, Maurice L.....New York
Streim, Eugene.....Long Island City
Struhl, Theodore R.....Brooklyn
Susinno, Anthony M.....New York
Taubman, Felix.....Flushing
Taylor, Harry N.....Kenmore
Thomas, Jack E.....Elmira
Tonderys, John S.....Cedarhurst, L. I.
Truex, George O. Jr.....Schenectady
Tuller, Theodore.....New York
Tuttle, Lloyd D.....Walworth
Van Dyne, Joseph R.....Brooklyn
Verderese, Louis T.....St. Albans
Vogel, Saul Z.....Woodhaven
Wagenhals, Charles O.....Syracuse
Wally, Edward S.....New York
Walton, Robert E.....Kenmore
Weinberg, Leonard D.....New York
Weisberg, Aaron.....Brooklyn
Weissberg, Julius L.....New York
Whitney, Chester H.....New York
Widger, Stanley W.....Rochester
Wiederlight, Seymour.....Brooklyn
Wiener, Howard E.....New York
Wolff, Hans.....New York
Yablonowitz, Jacob M.....Bronx
Yachnes, Irving.....Brooklyn
Zinke, Erhardt.....Richmond Hill

North Dakota

Nierling, Richard D.....Jamestown
Olson, Morton S.....Northwood
Robinson, Donald W.....Garrison
Ross, John M.....Hatton

Ohio

Alexander, Stephen J. Jr.....Dayton
Armour, Deane B.....Dayton
Armstrong, Charles B.....Cincinnati
Bennett, George W.....Cleveland
Birnbaum, Richard T.....Akron
Bobey, Milton E.....Cleveland
Bottomley, Thomas H. Jr.....Cleveland
Bower, Ernest Z.....Kent
Bullock, Richard E.....Toledo
Cohen, Lewis.....Bexley
Coombs, Frederick S. Jr....Youngstown
Doty, Earl W.....Rawson
Felson, Henry.....Cincinnati
Flagge, Albert E.....Cincinnati
Flynn, William J.....East Palestine
Ford, Manley L.....Twinsburg
Glazer, Alfred M.....Cincinnati
Glover, Donald M.....Cleveland Heights
Grau, Sidney.....Cleveland
Halley, Arthur D.....Columbus
Hinnant, Iredel M.....Shaker Heights
Ireland, Robert B.....Columbus
Jolly, Paul N.....Cincinnati
Keyes, Sidney C.....Youngstown
Kiess, John S.....Bucyrus
Klein, Harold C.....Cleveland
Knowlton, Richard S.....Cleveland
Lacey, Henry B.....Columbus
Ladd, Louis W. Jr.....Shaker Heights
Leffler, Paul B.....Toledo
Lewis, Norman.....Cleveland
Lowensohn, Robert H.....Cleveland
McBride, James M.....Lima
McGavran, Charles W. II.....Columbus
McGuire, Charles W.....Elyria
Miller, Rollis R. Jr.....Cleveland
Musgrave, Myrl DeF.....Cleveland
Owen, Kenneth A.....Akron
Peal, Stanley.....Cincinnati
Perry, Daniel J.....Cincinnati
Robinson, James H. Jr.....Wilberforce
Rogers, Robert A.....Steubenville
Ross, Ervin S.....Cincinnati
Ross, Gale F.....Milledgeville
Schlueter, Franklin C.....Cincinnati
Schneider, Irving M.....Cleveland
Schock, Hyman C.....Shaker Heights
Schonberg, Albert L.....Cleveland
Schwartz, Frederick C.....Cleveland
Schwind, Frederick J.....Toledo
Shuer, Bernard B.....Toledo
Snyder, Roscoe H.....Toledo
Spitzer, Richard G.....Massillon
Stahl, William C.....Columbus
Stephens, James T.....Oberlin
Sutherland, Lyndon C.....Springfield
Tedrow, George C.....Crooksville
Tetalman, Sam.....Cleveland Heights
Thompson, George O.....Alliance
Urban, Frank K.....Cleveland
Volzer, Elmer A.....Canton
Walter, Clyde K.....Youngstown
Yamshon, Leonard J.....Cleveland Hts.
Zollinger, William K.....Piqua

Oregon

Albert, Joyce A.....Portland
Beck, William F.....Lake Grove
Broun, James R.....Portland
Buonocore, Lawrence W.....Medford
Davis, Marvin C.....Klamath Falls
Earl, Guy L.....Cottage Grove
Eastwood, Roy W.....Corvallis
Fisher, G. A.....Portland
French, Alfred J.....Marshfield
Hall, Barnard.....Portland
Healy, Thomas S.....Portland
Imboden, Lucien H.....Portland
Jump, Clarence E.....Roseburg
Larsell, John F.....Portland
Larson, Virgil C.....Eugene
Marshall, Alfred N.....Portland
Miller, Harry H.....Bend
Mills, Waldo O.....Portland

PHYSICIANS SEPARATED FROM SERVICE

Oregon—Continued

Neace, Lewis C.....Portland
Oliver, John B.....Rickreall
O'Toole, Arthur J.....Portland
Richardson, John R. F.....Portland
Roley, Williard C.....Portland
Ruuska, Paul E.....Portland
Schefter, Robert P.....Portland
Schuler, Francis B.....Medford
Sherwin, Richard N.....Portland
South, F. Floyd.....Portland
Steinfeld, Gordon D.....Portland
Stucky, Jack E.....Klamath Falls
Sue, Julius F.....Portland
Todd, Charles K.....Portland
Trommald, John P.....Portland
Wade, Ralph M.....Albany
Wood, Robert L.....Salem

Pennsylvania

Aitken, Douglas H.....Carbondale
Balin, Solomon L.....Philadelphia
Ballentine, George N.....Williamsport
Batoff, Milton A.....Philadelphia
Bierer, William E.....Greensburg
Blum, Marvin.....Wilkesbarre
Budura, Paul.....Bethlehem
Buka, Robert Jr.....Pittsburgh
Burke, William A.....Johnstown
Bush, Francis.....Etna
Canfield, John J.....Pottsville
Carabello, Charles A.....Reading
Cawley, Robert D.....Jermyn
Ceraso, Samuel T.....Vandergrift
Chetlin, Milton A.....Pittsburgh
Chick, Nicholas.....Brackenridge
Clateman, Arthur.....Monessen
Cohen, Reuben R.....Pittsburgh
Coltman, Arthur B.....Philadelphia
Daniels, Jay H.....Connellsville
Diehl, William H.....Lebanon
Dorman, Gordon.....Philadelphia
Eyler, Paul W.....Lititz
Fidler, Jay W. Jr.....Shillington
Fitzpatrick, James J.....Pittston
Friedman, Adolph A.....Philadelphia
Galinsky, Morris D.....Philadelphia
Goldstein, Howard J.....Philadelphia
Grasley, William C.....Allentown
Hallett, Joseph W.....Yeadon
Harps, James A.....Stroudsburg
Hassler, Frank S.....Harrisburg
Hawkins, Charles F.....Spring Grove
Hepburn, James M.....Wilkinsburg
Hetzler, Norman A.....Rochester
Howland, Alvin W.....Cynwyd
Hughes, Lloyd W.....Hollidaysburg
Huska, William.....Philadelphia
Kamholz, Jack H.....Elkins Park
Kerstein, Emanuel M.....Coatesville
Kiesewetter, William B.....Chalfont
Kissinger, Charles F.....Enon Valley
Kunkel, William H.....Wilkinsburg
Lartz, Robert E.....Sharon
Leeper, Robert H.....Philadelphia
Lichter, William S.....Pittsburgh
Lohman, Albert E. J.....Shillington
McFall, John S. R.....Pittsburgh
McGee, William R.....Uniontown
McNicholas, Edward M.....Philadelphia
Marcovitz, Eli.....Philadelphia
Marton, Victor W.....Allentown
Miller, Wadsworth L.....Pittsburgh
Myers, Arthur L.....Philadelphia
Naidoff, David.....Philadelphia
Neal, Harry B. Jr.....Indiana
Neal, Roland A.....Forest Hills
Orringer, Harry B.....Pittsburgh
Pavlatos, August C.....Lancaster
Penneys, Raymond.....Philadelphia
Portnoff, Clifton L.....Philadelphia
Puntereri, Anthony J.....Etna
Reed, Harry W.....Philadelphia
Rumball, John M.....Aspinwall
Rylands, Robert McD. Sr.....Pittsburgh

Pennsylvania—Continued

Shugert, John H.....Rochester
Shupe, David R. W.....Saltsburg
Stahler, Sidney.....Scranton
Stein, George N.....Jenkintown
Tannehill, Norman B.....Girard
Thomas, Lewis B.....West Nanticoke
Ulin, Abraham.....Philadelphia
Ulin, Alexander W.....Philadelphia
Valone, James A.....Erie
Waltz, Paul K.....Philadelphia
Weisel, William F. Jr.....Quakertown
Weiss, Eugene K.....Philadelphia
Williams, Robert G.....Scranton

Rhode Island

Clarkin, Charles P.....Norwood
Collom, Harold L.....Apponaug
Fortunato, Stephen J.....Providence
Garrigues, Henry B.....Woonsocket
Holdredge, Bertram L. Jr.....Narragansett
Horwitz, Manuel.....Providence
Kennedy, John A.....Woonsocket
Lalor, Thomas J.....Woonsocket
Mochnacky, John.....Providence
Rakatansky, Nathan S.....Providence
Ricci, Edward A.....North Providence
Schauer, Gerhard.....Howard
Sydlowski, Edmund J.....Providence
Tetreault, Theo E.....Providence
Verrone, Anthony C.....Providence
Wadsworth, Morton L.....Providence
Whalley, Evan J.....Pawtucket

South Carolina

Berry, Abram.....Columbia
Hall, William S.....Columbia
Kerhulas, Andrew A.....Union
Kerr, William K.....Abbeville
Mamin, Harry.....Columbia
Mims, Harry W.....Columbia
Snoddy, Warren McC. Jr.....Fairmont
Whitaker, Charles B.....Columbia

Texas

Bailes, Porter M. Jr.....Tyler
Baldwin, Harvey C.....Corpus Christi
Crumpler, Hulen P.....Pecos
Fielding, Lewis J.....Waco
Frost, Jack E.....Dekalb
Heye, Randall G.....Galveston
Jackson, James E. Jr.....Houston
Laughlin, John M.....West Columbia
Lumpkin, Yalter L. Jr.....Dallas
Marshall, Howard J. H.....El Paso
Moore, Roscoe O.....Austin
Nail, Benjamin M. Jr.....Crawford
Norman, Earle T.....Uvalde
Paim, William M.....Houston
Parrish, Frank F. Jr.....Houston
Pruit, Lee T.....Beaumont
Rouse, James W. H.....San Antonio
Schmitt, Herbert S.....Malakoff
Sessums, John V.....San Angelo
Sloan, John J.....Corpus Christi
Stanley, Edward S.....Dallas
Wallace, Benjamin C. Jr.....Temple
Watt, Terrence N.....Austin
Wegener, Karl F. E.....Amarillo
Wells, William H.....Waco
Wilkinson, Lawrence H.....Katy
Williams, Stephen A.....Houston

Utah

Boggess, Eldin W.....Murray
Brinton, Sherman S.....Murray
Fisher, Don L.....Bountiful
Garr, William R.....Hiawatha
Isgreen, John W.....Salt Lake City
Jenkinson, Alton A.....Richfield
Newman, Milton A.....Salt Lake City
Peery, Louis S.....Ogden
Richards, Harlow G.....Salt Lake City
Way, Grant H.....Ogden
Woodruff, Charles W.....Salt Lake City
Young, Clark.....Salt Lake City

Vermont

Blackburn, Charles R.....Brattleboro
Bogle, Bascom.....Northfield
Cooper, Philip.....White River Junction
Deos, Harland M.....Lyndonville
Dugan, Robert B.....South Burlington
Dunsmore, Murray K.....St. Albans
Farrell, Richard F.....Shelburne
Kingston, Louis C.....Barre
Larner, Robert.....Burlington
Lord, John P.....Brattleboro
O'Brien, Thomas E.....Winooski
O'Neil, James C.....Waterbury
Petter, John B.....Northfield
Root, Howard S.....Newport
Saxby, Robert N.....Morrisville
Shelc, Joseph P.....Bellows Falls
Smith, Robert P.....Burlington
Wetherbee, Harmon P.....Burlington
Wool, Jack.....Burlington
Zambon, Leo U.....South Ryegate

West Virginia

Baron, Louis E.....Mannington
Chappell, William H.....Thomas
Crook, Charles L.....Huntington
Gish, George R. Jr.....Bluefield
Glass, William J. Jr.....Sissonville
Goodson, James R.....Davy
Goodwin, Olin M.....Buckhannon
Grove, Thomas L.....Huntington
Gwinn, Frank W.....Lowell
Holmes, Albert W.....Hinton
Jones, Edward V. Jr.....Morgantown
Kardos, George.....Corton
Keller, Frederick D.....Paden City
Mallamo, Joseph T.....Fairmont
Martin, James F.....Elkins
Mullins, George R.....Logan
Nefflen, Louis H.....Elkins
Niehaus, Andrew J.....Triadelphia
O'Brien, Thomas P.....Benwood
Perilman, William.....Wheeling
Ponka, Joseph L.....Morgantown
Reeder, Franklin H.....Charleston
Riheldaffer, William H.....Romney
Rubin, Herman M. F.....Wheeling
Smith, Robert G.....Beckley
Todd, Lee B.....Quinwood
Walsh, Eugene L. B.....Huntington
Wilson, James E. Jr.....Clarksburg

Wisconsin

Alcorn, Marshall W.....Burlington
Barnstein, Norman J.....Sun Prairie
Benell, Theodore.....Milwaukee
Budny, Clement L.....Milwaukee
Cook, James C.....Racine
De Canio, John.....Hales Corners
Dollard, James E.....Madison
Eisenberg, Herman L.....Madison
Emrich, Paul S.....Oshkosh
Gollin, Harvey A.....Milwaukee
Ihrke, Royal E.....Omro
Kores, Ambrose B.....Milwaukee
Matt, Joseph R.....Milwaukee
Mellencamp, Franklin J.....Milwaukee
Merline, Gerald B.....Green Bay
Oosterhous, George E.....Madison
Robbins, Leonard S.....Milwaukee
Rotter, Earle J.....Milwaukee
Straus, Gerhard D.....Shorewood
Van Demark, Robert E.....Stoughton
Wright, Hobart H.....Milwaukee

Wyoming

Radakovich, Michael.....Rock Springs
Vicklund, Nels A.....Thermopolis

Puerto Rico

Guzman, Manuel Jr.....Santurce
Padro, Fernando.....San Juan

Hawaii

Miyamoto, Robert M.....Hilo, Hawaii

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Heart Symposiums.—The California Heart Association will hold its annual symposiums in San Francisco, Los Angeles and San Diego, October 16-25. Guest speakers will include Dr. John Parkinson, National Heart Hospital, London, England, who will discuss recent developments in cardiac radiology and rheumatic fever, and Dr. Helen B. Taussig, Baltimore, who will report on the conception and development of the surgical treatment of congenital heart disease. Physicians may register for the symposium at San Francisco, October 16-19, San Francisco Heart Committee, 604 Mission Street, San Francisco 5; at Los Angeles, October 23-25, Los Angeles Heart Association, 117 West 9th Street, Los Angeles 15. Registration for the San Diego meeting, October 21, can be made through the San Diego County Medical Society, 1410 Medico-Dental Building, San Diego.

Development of Mental Hygiene Program.—The Commonwealth Fund, New York, has made a grant to the California State Department of Public Health for the establishment and development of a mental hygiene program within the department and for demonstrations in preventive mental hygiene services at the local level. The grant is for two years with provision for extension, according to *California's Health*. The initial step will be the employment of a psychiatric consultant in the division of preventive medicine, who will plan and direct a program which will complement, rather than duplicate, the program conducted by the state department of mental hygiene. Through inservice training, demonstrations and lay and professional education, the program will seek to integrate and incorporate mental health and psychiatric principles into public health and preventive medicine.

COLORADO

Personal.—Dr. Harold Dinken, Port Chester, N. Y., who has been studying physical medicine at New York University College of Medicine, on a fellowship of the Baruch Committee for Physical Medicine since 1945, has been appointed assistant professor of medicine and head of the division of physical medicine at the University of Colorado School of Medicine, Denver.

Course in Psychosomatic Medicine.—At the request of the American College of Physicians, the University of Colorado School of Medicine, Denver, will offer a one week refresher course in psychosomatic medicine for practicing physicians, starting September 23. Special lectures on psychotherapy will be given by Dr. O. Spurgeon English, visiting professor of psychiatry, from Temple University, Philadelphia. Other participants in the course will include members of the faculty of the University of Colorado Medical School. The main content of instruction will be given in seminars, based on clinical examination of selected patients from the medical wards and the outpatient clinics of the University of Colorado School of Medicine and Hospitals, it was stated.

ILLINOIS

Priestley Medal Goes to Roger Adams.—The Priestley Medal of the American Chemical Society will be presented September 11 to Roger Adams, Sc.D., professor and head of the department of chemistry, University of Illinois, Urbana. The award goes to Dr. Adams for his distinguished work in organic chemistry.

Institute for Mothers of Preschool Blind.—A summer institute for mothers of preschool blind children was held at the State School for the Blind, Jacksonville, August 25-30, under the auspices of the state department of public welfare, Illinois Commission for Handicapped Children, University of Illinois division of services for crippled children, and state superintendent of public instruction. Among the speakers were:

Dr. George L. Drennan, Jacksonville, Physical Development of the Child.
Dr. Barbara Spiro, Chicago, The Structure of the Eye and Causes of Blindness.
Mr. Howard E. M. Miller, Chicago, The Blind in the Community.

Chicago

Faculty Changes at Northwestern.—Dr. Smith Freeman has resigned as professor of physiology at Northwestern University Medical School to become head of the biochemical section of the Mayo Clinic, Rochester, Minn., and professor on the graduate faculty of the University of Minnesota. His activities will consist in clinical consultation, experimental work and the teaching of medical fellows. Dr. Freeman, who graduated at Northwestern in 1938, has been a member of the faculty there since 1929. Wendell J. S. Krieg, Ph.D., associate professor of neurology at Northwestern University since 1944, has been appointed director of the Institute of Neurology and professor of neurology, to succeed William F. Windle, Ph.D. Dr. William B. Wartman, assistant professor of pathology, Western Reserve University School of Medicine, Cleveland, pathologist in charge, University Hospitals, Cleveland, and pathologist, Lake County Hospital, Painesville, Ohio, has been appointed professor of pathology and chairman of the department at Northwestern, effective August 1. He succeeds Dr. James P. Simonds, who has retired with the rank of professor of pathology emeritus. Dr. Thomas C. Laipply, assistant professor of pathology, Western Reserve University School of Medicine, has been appointed associate professor of pathology at the medical school. Among other positions Dr. Laipply was also pathologist and director of laboratories, Lakewood Hospital, Lakewood, Ohio.

MAINE

Personal.—Dr. Francis H. Sleeper, Boston, assistant to the commissioner of mental health in Massachusetts, has been appointed superintendent of the Augusta State Hospital and consultant on hospitals and mental health to the Maine Department of Institutional Service, effective September 1, succeeding Dr. Forrest C. Tyson, retired.

State Medical Election.—Dr. Stephen A. Cobb, Sanford, was chosen president-elect during the ninety-second session of the Maine Medical Association, June 23-24. According to the records of the association, Dr. Cobb is the first member to be reelected president-elect, as he was chosen to this office during the 1942 meeting and shortly thereafter called to duty in the U. S. Army Medical Corps. Dr. John O. Piper, Waterville, is president. Other officers include Dr. Frederick R. Carter, South Portland, who was reelected secretary-treasurer, and Esther M. Kennard, Portland, reelected assistant secretary of the association and assistant business manager of the association. The meeting attracted 322 members and 152 guests. An increase in dues for the year 1947 to $35 for each member was approved.

MISSISSIPPI

Commission on Medical Care Created.—Dr. Dolph V. Galloway, Jackson, director of health education, Mississippi State Department of Health, was chosen executive director of the newly created Mississippi Commission on Medical Care at its first meeting in Jackson, August 5. The commission, which was organized by a recent act of the legislature, has received an appropriation of $5,000,000 to carry out its activities. According to the Jackson *News*, August 7, the commission at its initial meeting authorized employment of a trained person to make the survey called for in the projected hospital-medical care program. This survey is for the purpose of determining the need for hospital facilities in the state. Under the program the state is to provide grants for hospital facilities. Federal funds are to be available under the Hill-Burton bill. Around 33⅓ per cent of the cost of the facilities is anticipated from the federal government, with the state putting up 60 per cent, leaving the rest to counties or communities. The commission is also to set up a prepayment plan of hospitalization or hospital insurance. The four year medical teaching college to be located in Jackson calls for 350 beds and will be started when the outlined comprehensive statewide hospital program is assured of completion. A companion hospital bill permits counties or communities to issue bonds to provide their matching funds. By an act of Congress, Mississippi is to receive $12,500,000 over a five year period for hospital construction. Counties planning construction of hospitals include Washington, Clay, Lowndes, Oktibbeha, Coahoma, Quitman, Tunica, Choctaw, Kemper, Jones, Leake and Jeff Davis. Other members of the Mississippi Commission on Medical Care appointed by Governor Bailey are Jack Montgomery, Inverness, chairman; J. O. Slaughter, Columbus, vice chairman, and Owen Cooper, Jackson, secretary of the Mississippi Farm Bureau, secretary; Dr. Walter L. Shackelford, superintendent of the South Mississippi Charity Hospital, Laurel; Dr. Henry Boswell, Sanatorium, superintendent of the State Sanatorium, Carl Bloomquist, Port Gibson, and Dr. Felix J. Underwood, state health officer, ex officio member.

MISSOURI

Appointments at Washington University.—Dr. Hallowell Davis, associate professor of physiology, Harvard Medical School, Boston, has been appointed research professor of otolaryngology and associate professor of physiology at Washington University School of Medicine, St. Louis, and director of research for the Central Institute for the Deaf. Dr. Davis, who graduated at Harvard in 1922, will direct the expansion of the research and clinical program dealing with all phases of deafness, hearing and speech defects.

New Division of Postgraduate Medical Education.—Washington University School of Medicine, St. Louis, has established a division for postgraduate medical education, primarily designed for physicians returning to civilian life after having served in the armed forces. The new division is under the direction of Dr. Franklin E. Walton, Clayton, assistant dean of the school of medicine. The courses of study are conducted at various postgraduate levels. Long term, full time training of one to four years is offered at the residency level in the major clinical fields. Graduate courses in certain specialties are arranged for those with adequate basic training. Refresher courses in certain specialties are developed for qualified practitioners who have been separated from their specialties during the war years and to prepare recent qualified graduates for the specialty boards. Admission to the division for postgraduate medical education will be granted to graduates of an approved medical school who have completed one year of internship or served its equivalent in the medical corps of the armed forces.

NEBRASKA

The Morsman Foundation for Endocrinology.—Establishment of the Dr. Charles Frank Morsman Foundation at the University of Nebraska College of Medicine, Omaha, was announced August 8. The foundation, set up by Dr. Morsman, Hot Springs, S. D., will further the knowledge of endocrinology, the study of internal secretion of endocrine glands. Perry W. Branch, director of the University of Nebraska Foundation, said $10,000 has been given to the foundation by Dr. Morsman, according to the Lincoln *State Journal*, August 8. "The purposes of this gift are to enhance and disseminate knowledge in endocrinology, to train men and women to become endocrinologists and to provide diagnosis and treatment of persons who are ill or abnormal because of disorders of endocrine glands," Mr. Branch said. The fund, administered by the University Foundation, will be used for fellowships, a series of lectures or the diagnosis of patients who are ill or abnormal because of disorders of the endocrine glands. Later, if sufficient income from the Morsman Foundation becomes available, a clinic will be established in the college of medicine for carrying on further study with endocrine glands. An administrative committee composed of Dr. Harold C. Lueth, dean, as chairmain and others will direct the activities of the Morsman foundation.

NEW YORK

Health Department to Study Influenza.—A new effort to extend medical knowledge about influenza, in which Rochester will play an important part, is being launched by the state health department, according to the Rochester *Times-Union*, August 16. The study, which will be continued for several months, will be conducted by laboratory examination of blood specimens taken by hospitals for routine blood tests and also blood volunteered at monthly intervals by the state health department employees. The object of the undertaking is to study the distribution of influenza in the general population according to age, sex, location and the month of the year. The basis of the tests, Dr. Joseph Garen, Saranac Lake, state district health officer, explained, will be the protective antibodies found in the blood of persons who have had influenza within a month before the tests. The blood specimens will be employed in tests on small animals, probably mice, which will reveal whether or not the antibodies are present. Both type A and type B influenza will come within the scope of the study.

New York City

Cancer Prevention Clinic.—The Hospital for Joint Diseases has opened a cancer prevention clinic to assist persons who are apparently in good health to obtain a thorough physical examination by competent physicians who make a careful search for the possible beginnings of malignant growths. The clinic is organized along the lines suggested by the New York City Cancer Committee and was opened after several months of study of similar clinics by Dr. Jacob J. Golub, director of the hospital, and Dr. Harold B. Davidson, who is in charge of the clinic, and after the completion of training of personnel and the assignment of an adequate suite of clinic rooms and laboratory space and equipment.

Research on Pemphigus Vulgaris.—The United Hospital Fund has given a grant of $3,500 to the Long Island College Hospital to continue an investigation of pemphigus vulgaris. The work is being carried out by Dr. Arthur W. Grace, professor of clinical dermatology and syphilology at the Long Island College of Medicine, Brooklyn, assisted by Dr. Irving L. Milberg and Dorothy Kley.

George Wallace Retires.—On August 31 Dr. George B. Wallace retired as professor and chairman of the department of pharmacology at the New York University College of Medicine, concluding forty-four years' service to the university. Dr. Wallace, who graduated at the University of Michigan Medical School, Ann Arbor, in 1897, joined the New York faculty in 1902 as an instructor, becoming professor four years later and chairman of the department of pharmacology in 1942.

William Dock Given New Appointment.—Dr. William Dock, professor and head of the department of medicine at Long Island College of Medicine, Brooklyn, has been named chief of medical services in the college division at the Kings County Hospital. This appointment is the first to be announced by the college under its program of further expansion as a community institution. As chief of medical service, Dr. Dock will be responsible for the professional care of patients and instruction of students. The college division numbers 750 beds, of which 180 are in the medical service. Dr. Dock graduated at the University of Chicago School of Medicine in 1923. He joined the Long Island faculty in 1944 following his resignation at the University of Southern California, Los Angeles, where he was professor of medicine. From 1941 to 1943 he was head of the department of pathology at Cornell University Medical College.

OKLAHOMA

Associate Executive Secretary.—Mr. Clayton Fondren, Oklahoma City, a graduate of the University of Oklahoma, who recently completed forty-eight months' service with the Army Air Forces, has been appointed associate executive secretary for the Oklahoma State Medical Association. Mr. Dick Graham, Oklahoma City, is executive secretary.

Annual Fall Clinics.—The sixteenth conference of the Oklahoma City Clinical Society will be held at the Biltmore Hotel, October 28-31. Among the speakers will be:

Dr. Charles L. Brown, Philadelphia, Medicine.
Dr. Samuel A. Cosgrove, Jersey City, N. J., Obstetrics.
Dr. Claude F. Dixon, Rochester, Minn., Surgery.
Dr. Austin I. Dodson, Richmond, Urology.
Dr. Philip S. Hench, Rochester, Minn., Medicine.
Dr. Waldo E. Nelson, Philadelphia, Pediatrics.
Dr. Paul Padget, Fort Howard, Md., Medicine.
Dr. Walter L. Palmer, Chicago, Medicine.
Dr. Rawley M. Penick Jr., New Orleans, Surgery.
Dr. Leo G. Rigler, Minneapolis, Radiology.
Dr. Richard H. Sweet, Boston, Surgery.
Dr. Richard W. Te Linde, Baltimore, Gynecology.
Dr. James E. M. Thomson, Lincoln, Neb., Orthopedic Surgery.
Dr. Oliver E. Van Alyea, Chicago, Otolaryngology.
Dr. Shields Warren, Boston, Pathology.
Dr. Alan C. Woods Sr., Baltimore, Ophthalmology.

PENNSYLVANIA

Research Positions Created.—Hon. S. M. R. O'Hara, secretary of welfare of the commonwealth of Pennsylvania, announces the establishment of twelve positions for research in psychiatry and related fields at the Western State Psychiatric Institute and Clinic, Pittsburgh. At the institute numerous clinical and teaching activities, the latter in collaboration with the University of Pittsburgh, have already been initiated. The institute is the teaching and research hospital of the Pennsylvania mental hospital system, which includes twenty-one hospitals and institutions, with an average of 40,000 patients. Thus access to much clinical material is assured. Here it is expected will be trained psychiatrists, social workers, psychologists, nurses, occupational therapists and others for hospitals and private fields. These new positions provide for the appointments of properly qualified senior and junior research workers in psychiatry, internal medicine, biochemistry, neuropathology, neurophysiology and clinical psychology. Several positions, as in psychology and neurophysiology, are currently filled. In some instances research at the institute will be coordinated with teaching at the university; in such cases the applicant for appointment, and his qualifications, must meet also with the approval of the dean of the school of medicine. Interested persons may obtain further information by writing to the director of the institute, Dr. Grosvenor B. Pearson, O'Hara and DeSoto streets, Pittsburgh 13.

SOUTH DAKOTA

Dr. Foster Named Executive Secretary.—Dr. John C. Foster, Detroit, has been appointed executive secretary of the South Dakota Medical Association, newspapers report. Dr. Foster will have full time offices in Sioux Falls.

TENNESSEE

Dr. Krueger Joins Beirut University.—Hugo M. Krueger, Ph.D., associate professor of pharmacology, University of Tennessee College of Medicine, Memphis, has been appointed director of the department of pharmacology at the College of Medicine at the American University of Beirut, Syria.

Physiology and Pharmacology Units Merged.—The departments of physiology and pharmacology at the University of Tennessee College of Medicine, Memphis, were recently made into a single division under the direction of John P. Quigley, Ph.D., professor and chief of the division of pharmacology. The two departments will be maintained separately, with Dr. Quigley as chief of the division.

Knoxville Academy of Medicine Acquires Home.—The Knoxville Academy of Medicine, Knoxville, remodeled a private residence for its home and library. The east half of the building was erected in 1792 by John Sevier, who was the first governor of Tennessee. The academy was formerly known as the Knox County Medical Society, which was organized and

Home and library of the Knoxville Academy of Medicine.

chartered in 1857. The membership of the academy is about 200. There are 27 living past presidents in the academy, and their photographs with other presidents have been collected and hung on the walls of the library. Miss Mary Louise Ogden has been employed as full time librarian to assist physicians in obtaining information on any given subject. The library has more than 2,000 volumes, with some thirty-six medical, surgical and specialty journals. The academy has available assets of $50,000 with no liabilities as well as a cash balance in the bank. The academy publishes a news bulletin. In addition to the library the building contains an assembly hall, which will be used for academy meetings.

WEST VIRGINIA

Newman Dyer Named Health Officer.—Dr. Newman H. Dyer, Bartley, has been appointed state health commissioner by Governor Clarence W. Meadows to succeed Dr. John E. Offner, Weston, resigned (THE JOURNAL, August 31, p. 1520). The new appointment was effective September 1. Dr. Dyer is a native West Virginian, having been born at Webster Springs. He graduated at the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1926, was licensed to practice in West Virginia the same year and opened offices at Raysal. A short time afterward he moved to Bartley, where he is still engaged in practice. Dr. Dyer spent several months during 1945 and 1946 at the University of Michigan, Ann Arbor, taking a postgraduate course leading to a master's degree in public health. He expects to complete his work there in the near future. Dr. Dyer has been a member of the council of the West Virginia State Medical Association for the past three years and is also serving as a member of the advisory committee to the legislative interim committee appointed by Governor Meadows to study public health problems.

WYOMING

Wilbur Smith Joins Wyoming University.—Dr. Wilbur C. Smith, formerly professor of gross anatomy, Tulane University of Louisiana School of Medicine, New Orleans, has been appointed director of student health at the University of Wyoming.

GENERAL

Urologic Prize Goes to Earl T. Engle.—The $1,000 prize of the American Urological Association was presented to Earl T. Engle, Ph.D., professor of anatomy, Columbia University College of Physicians and Surgeons, New York, in honor of his many years' research into the ailments of the male reproductive tract. Dr. Ernest G. Crabtree, Boston, was chosen president-elect of the association and Dr. Alfred I. Folsom, Dallas, was installed as president. Dallas was tentatively selected as the meeting place for the 1947 convention.

Military Surgeons Meeting.—All physicians, surgeons, dentists, veterinarians and nurses, as well as medical administrators, are cordially invited to the convention of the Association of Military Surgeons of the United States, to be held at the Book-Cadillac Hotel, Detroit, October 9-11. Reservations should be sent to Col. Burt R. Shurly, chairman, Hotels Committee, 1005 Stroh Building, Detroit 26. In addition to the schedule of meetings, banquets luncheons and symposiums the convention will feature a total of twenty-five panel discussions relative to the various activities of the military surgeons. The subjects to be covered are anesthesia, aviation medicine, dentistry, eye, ear, nose and throat, medicine, fractures, nurses (army and navy), plastic surgery, thoracico-abdominal surgery, public health, medical administration, veterinary surgery, and wounds and wound healing.

Socioeconomic Studies of Nurses.—At the request of the National Nursing Council, the U. S. Bureau of Labor Statistics has begun a study of the socioeconomic status of nurses. A questionnaire will be sent to a large representative sampling of perhaps 40,000 registered nurses to determine salaries, hours, working conditions and job attitudes. Recipients of the questionnaire will be chosen carefully from all parts of the country and all types of nursing in order to give an accurate picture of the national situation. In addition to the questionnaire, face to face interviews will be held with a smaller group to determine why nurses leave their profession for other fields and why there is so much shifting from one position to another within the profession. Information gathered will then be compared with similar information that is available about such workers and librarians, teachers, dietitians and social workers. The National Nursing Council has headquarters at 1790 Broadway, New York 19.

Traineeships in the Diagnosis and Treatment of Cancer.—The National Cancer Institute, Bethesda, grants each year a number of traineeships in the diagnosis and treatment of cancer to physicians who are interested in receiving special training in this field of medicine. Between 75 and 100 such traineeships will be awarded during the fiscal year July 1, 1946 to June 30, 1947. Minimum requirements are graduation from an approved medical school and one year internship in a hospital approved by the American Medical Association. Applicants must be under 40 years of age and be acceptable to the institution selected for training, with which they must make their own arrangements. The stipend is paid on a per diem basis and amounts to between $2,500 and $3,000 a year. Appointments are made for one year at a time and may be extended up to a maximum of three years. Full information and application blanks may be obtained by writing to the National Cancer Institute, Bethesda, Md.

Warning of Impostor.—Information has been received at the headquarters offices of the West Virginia State Medical Association to the effect that a man representing himself to be a veteran of World War II has appeared in several towns in southern West Virginia, where he has visited the offices of physicians asking for a prescription for morphine. The story told by this pseudoveteran is that he was a lieutenant in the A. A. F., was shot down over Europe and was a prisoner of war for several months. He says that he sustained a spinal injury and has a carcinoma of the prostate. Asking for a prescription for ½ grain of morphine, he exhibits a letter from the Walter Reed Hospital, which sets forth the needs of this "patient." Information supplied by the F. B. I. and the Federal Narcotic Bureau is that this man is an impostor and has never served in the army nor been a patient at Walter Reed Hospital,

and that he is reportedly a narcotic addict. He is about 28 years of age, 5 feet 7 inches tall and weighs about 125 pounds. He is of sallow complexion and limps slightly. Doctors are asked to be on the lookout for this man and to notify the local authorities or the F. B. I. immediately.

Anniversary of the Discovery of Insulin.—On September 23 Eli Lilly and Company will sponsor an international diabetes clinic to be held at the Indiana University Medical Center in Herty Hall of the State Board of Health Building, Indianapolis. Among the speakers will be:

Dr. Joseph H. Barach, Pittsburgh, Twenty-Five Years of Insulin.
Dr. Charles H. Best, Toronto, Ont., Canada, The Discovery of Insulin.
Dr. John R. Williams, Rochester, N. Y., Sir Frederick Banting.
Dr. Bernardo A. Houssay, Buenos Aires, Etiology of Diabetes.
Dr. R. D. Lawrence, London, Diabetes in England.
Dr. Carl F. Cori, St. Louis, The Action of Insulin.
Dr. H. C. Hagedorn, Gentofte, Denmark, Modification of Insulin.
Dr. Elliott P. Joslin, Boston, Problems of the Future.

Other speakers will include Drs. James O. Ritchey, Indianapolis, Franklin B. Peck, Indianapolis, Moses Barron, Minneapolis, William D. Sansum, Santa Barbara, Calif., and George H. A. Clowes Jr., Indianapolis. The event commemorates the twenty-fifth anniversary of the discovery of insulin, which is also being observed with a special program in Convocation Hall, University of Toronto, September 16. This observance will be followed by the regular annual meeting of the American Diabetes Association (THE JOURNAL, August 17, p. 1377).

Proposed Federal Institute to Apply Atomic Energy for Humanitarian Purposes.—Plans for the establishment in or near Washington of a new Federal Research Institute to utilize the development of atomic energy for humanitarian purposes were revealed August 15 by Dr. Thomas F. Parran, Surgeon General, U. S. Public Health Service, according to the New York *Times*, August 16. The directors of the Bureau of Standards and the National Institute of Health working together and with the concurrence of the Federal Security Administrator and the Secretary of Commerce have "developed a plan for a joint research institute," it was said. The central feature of the proposed new institute, it was stated, would be a uranium pile "for the provision of isotopes of the several elements which are useful in biological and physical research." Around the uranium pile, when built up, would be at least two wings for the conduct of research activities by the Bureau of Standards and the institute of health and possibly, later on, a third wing with facilities for research in other fundamental sciences. The plans for the new institute were outlined by Dr. Parran at a meeting of the National Advisory Council on Mental Health. At present they were "at the scientific level of discussion" and, though as yet incomplete, were in an advanced state of development. When completed, and if and when approved by the administration, Dr. Parran said, appropriations would be requested of Congress, jointly by the Bureau of Standards and the Institute of Health, for the new project, authorization of which already had been provided in existing legislation.

Drive on Alcoholism.—Connecticut, New Hampshire, New Jersey and Alabama have earmarked funds for treatment of alcoholic addicts, and fourteen cities throughout the country have established committees for education on alcoholism, the Council of State Governments reported to the press, August 5. The Connecticut Commission on Alcoholism has taken over the Yale University Plan Clinics (THE JOURNAL, June 12, 1943, p. 454). Under the Connecticut program the Yale plan and Hartford Clinic branch will serve as patterns for similar units in other large cities of the state. The clinical treatment provides for counseling without institutionalizing those who come voluntarily or are sent by relatives or the courts. The clinics are staffed by a psychiatrist, general physician, lay therapist and psychiatric social worker, and they cooperate with Alcoholics Anonymous and with public and private agencies. The Yale clinics reported that drunkenness had been checked and sometimes cured in 50 per cent of the cases, the treatment of which had progressed beyond the diagnostic stage, during which the patient talks to staff members about his background and problems. During the guidance period, which may run several months, the patient has several talks a week with a psychiatrist. The patient also may drop in or telephone the clinic when a special problem arises. The state spends from $60 to $100 to treat each patient. Cities with local committees for education on alcoholism, the council said, were Austin, Dallas and Fort Worth, Texas; Boston; Charleston, W. Va.; Daytona Beach, Fla.; Des Moines, Iowa; Pittsburgh; Rochester, N. Y.; Youngstown, Ohio; Seattle; Washington, D. C.; New York and San Francisco.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service, as follows:

Division and State	Aug. 24, 1946	Aug. 25, 1945	Median, 1941-45	Total to Aug. 24, 1946	Total to Aug. 25, 1945
New England States:					
Maine	2	4	2	11	37
New Hampshire	13	4	0	76	15
Vermont	4	1	1	17	19
Massachusetts	17	37	8	63	149
Rhode Island	3	0	1	13	1
Connecticut	2	16	16	36	85
Middle Atlantic States:					
New York	105	191	66	455	870
New Jersey	16	88	26	107	440
Pennsylvania	16	65	65	109	246
East North Central States:					
Ohio	48	30	30	276	150
Indiana	20	10	10	107	70
Illinois	183	121	38	845	338
Michigan	76	13	11	313	61
Wisconsin	95	15	8	246	36
West North Central States:					
Minnesota	263	14	14	1,612	35
Iowa	43	19	13	254	48
Missouri	95	8	8	478	56
North Dakota	40	0	1	161	8
South Dakota	74	0	0	219	1
Nebraska	29	5	7	218	26
Kansas	60	3	3	413	36
South Atlantic States:					
Delaware	3	1	1	8	13
Maryland	12	9	9	39	55
District of Columbia	2	17	6	8	70
Virginia	11	20	9	60	181
West Virginia	5	7	4	37	32
North Carolina	4	11	4	61	71
South Carolina	0	17	5	18	129
Georgia	15	2	2	102	65
Florida	11	2	2	437	47
East South Central States:					
Kentucky	10	4	16	67	31
Tennessee	19	24	10	85	228
Alabama	21	5	5	288	109
Mississippi	22	4	2	179	35
West South Central States:					
Arkansas	35	2	2	193	23
Louisiana	21	4	2	229	42
Oklahoma	13	7	1	219	112
Texas	34	73	7	664	681
Mountain States:					
Montana	8	1	0	63	7
Idaho	1	0	0	10	3
Wyoming	12	2	1	61	5
Colorado	78	12	7	502	43
New Mexico	11	3	2	79	11
Arizona	8	3	1	67	8
Utah	8	14	3	44	87
Nevada	0	0	0	3	2
Pacific States:					
Washington	31	16	5	164	115
Oregon	12	3	3	59	16
California	195	24	16	873	291
Total	1,806	931	..	*10,648	5,239
Median, 1941-45	...	...	872	4,930	

*Cumulative total changed by corrected reports

CORRECTION

Samuel H. Belgorod.—In THE JOURNAL, July 20, page 978, announcement of the Award of the Army Commendation Ribbon to Lieut. Col. Samuel H. Belgorod appeared. Unfortunately Dr. Belgorod's first name was omitted entirely.

Marriages

JAMES JOSEPH JOHNSON, Freeland, Pa., to Miss Kathleen Jeanne Moran of New Rochelle, N. Y., June 15.

THOMAS NELSON PAGE JOHNS, Richmond, Va., to Miss Helen Cordier of East Hampton, L. I., N. Y., June 29.

CARL JOHN GRAF, Buffalo, to Miss Alma Ley Salsbury of Degolia, Pa., in Bradford, Pa., June 22.

WILLIAM EIDSON SMITH, Manchester, Ga., to Miss Jane Heath Hart of Dendron, Va., recently.

WAYNE H. MCCLURE, Kermit, Texas, to Miss Louise Ellett of Jennings-Ordinary, Va., March 31.

JOSEPH FRANCIS GERARD MUDD to Miss Mary Elizabeth Jones, both of St. Louis, June 6.

Deaths

Ward J. MacNeal ✠ New York; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; born in Fenton, Mich., Feb. 17, 1881; from 1901 to 1904 assistant and fellow in bacteriology at his alma mater, where he was an instructor of histology, 1905-1906; instructor in anatomy and bacteriology at the West Virginia University, 1906-1907; assistant chief in bacteriology, Illinois Agricultural Experimental Station, from 1907 to 1911; assistant professor of bacteriology at the University of Illinois from 1908 to 1911; professor of bacteriology at the New York Post-Graduate Medical School and Hospital, Columbia University, where he had been lecturer, director of the laboratories, member of the board of trustees and vice chairman of the medical board; fellow of the American Association for the Advancement of Science and the American College of Physicians; member of the Society of American Bacteriologists, American Society of Clinical Pathologists, American Association of Pathologists and Bacteriologists, serving as a member of its council for many years and past president, Association for Cancer Research, serving formerly as a member of its council and president, National Tuberculosis Association, Society for Experimental Biology and Medicine, New York Academy of Medicine, New York Pathological Society, of which he had been president and for many years trustee, New York State Society of Pathologists, serving as its vice president and president and the Harvey Society; assistant to president, Josiah Macy Jr. Foundation, from 1931 to 1936; member of the Illinois State Pellagra Commission from 1909 to 1912; served in France and on the trench fever commission during World War I; colonel, medical reserve corps, U. S. Army, not on active duty; co-author of "Studies in Nutrition" and author of "Pathogenic Micro-Organisms"; received honorary doctor of science degree from the University of Michigan in 1939 and doctor of philosophy in 1904; specialist certified by the American Board of Pathology, Inc.; died August 15, aged 65.

Joseph Peter Hoguet, New York; Columbia University College of Physicians and Surgeons, New York, 1907; born in Long Branch, N. J., Aug. 16, 1882; member of the American Medical Association; at one time assistant professor of clinical surgery at the Cornell University Medical College; during World War I served with the French army in the Neuilly and La Panne hospitals, receiving the French Legion of Honor; in 1917 was transferred to the medical corps of the U. S. Army, being assigned to War Demonstration Hospital number 1 in New York, teaching the Carrel-Dakin method of wound disinfection and remaining there until the end of the war; served as consultant surgeon at the North Shore Community Hospital in Glen Cove and on the staffs of the Bellevue, French and General Memorial hospitals and the Hospital for Ruptured and Crippled; an administrative assistant and medical director of the New York World's Fair of 1939; in 1926 was decorated by the French government for "service to mankind"; medical director of the Medical and Surgical Relief Committee of America during World War II; died in the New York Hospital June 17, aged 63, of coronary thrombosis.

Francis Denison Patterson ✠ Philadelphia; born June 21, 1875; University of Pennsylvania Department of Medicine, Philadelphia, 1896; Jefferson Medical College of Philadelphia, 1904; formerly a medical officer in the Pennsylvania National Guard; veteran of the Spanish-American War; fellow of the American Public Health Association and honorary member of the American Association of Industrial Physicians and Surgeons; for eight years served as chief of the division of industrial hygiene and industry of the department of labor and industry of Pennsylvania; served as a member of the advisory health board of Pennsylvania; in 1931 chairman of the U. S. delegation to the sixth International Congress on Industrial Accidents in Geneva, Switzerland, and also represented this country at similar conferences in Brussels, Budapest and Havana; served as chief medical adviser for many years and since 1945 as special medical consultant to the Pennsylvania Railroad; in 1911 received the Alvarenga prize of the College of Physicians of Philadelphia for his thesis on the parathyroid glands; died in Overbrook June 2, aged 70, of coronary thrombosis.

Robert Bruce Malcolm, Chicago; McGill University Faculty of Medicine, Montreal, Que., Canada, 1910; associate professor of surgery at the University of Illinois College of Medicine; served in the medical corps of the Canadian army during World War I; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; member of the American Medical Association; past president of the North Shore Branch of the Chicago Medical Society; on the staffs of the Illinois Research Hospital and the Illinois Masonic Hospital, where he died June 22, aged 57, of myocardial infarction and diabetes mellitus.

Ernest Jason Alley, Billerica, Mass.; University of Vermont College of Medicine, Burlington, 1899; member of the American Medical Association; served on the board of health; died May 23, aged 71, of arteriosclerotic heart disease.

Norman Edgar Anderson, Harmony, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; member of the American Medical Association; served as mayor, member of the board of education and bank president; past president of the Fillmore-Houston Medical Society; on the staff of the Decorah (Iowa) Hospital; died June 12, aged 65, of coronary thrombosis.

Frederick Moore Andrus ✠ Lincoln, Neb.; Lincoln Medical College of Cotner University, 1900; on the staffs of the Bryan Memorial, Lincoln General and St. Elizabeth hospitals; died June 14, aged 73, of thrombosis and heart block.

Fred Leslie Ankrum, Seattle; State University of Iowa College of Medicine, Iowa City, 1908; died May 18, aged 61, of arteriosclerotic heart disease.

George Brandt Arnold ✠ Kansas City, Kan.; University of Kansas School of Medicine, Kansas City, 1927; specialist certified by the American Board of Urology; served during World War I; past president of the Kansas City Urological Society; served on the staffs of the Research, St. Joseph, St. Luke's, St. Mary's and Trinity Lutheran hospitals in Kansas City, Mo.; member of the Missouri State Medical Association; died in the Veterans Administration Facility, Wadsworth, June 10, aged 51, of hypertension.

Lawrence Hughes Bloom ✠ Easton, Pa.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1917; president of the Warren County Medical Society for a term; served overseas during World War I; a member of the staff of the Warren Hospital, Phillipsburg, N. J.; on the staff of the Easton Hospital; died June 16, aged 51, of coronary heart disease.

Selina Bloom ✠ New York; Presbyterian Hospital and Woman's Medical College, Cincinnati, 1892; died June 6, aged 80.

Harold Bernard Cassidy, Chicago; University of Illinois College of Medicine, Chicago, 1927; formerly associated with the Indian Service; served during World War II; died in July, aged 44.

Henry Lewis Charles, Alhambra, Calif.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; member of the American Medical Association; served during World War I; for some time in charge of the school district health and sanitation department; on the courtesy staff of the Alhambra Hospital; died May 15, aged 65, of heart disease.

Clinton C. Collier ✠ Whitehall, Mich.; Chicago Homeopathic Medical College, 1904; Hahnemann Medical College and Hospital, Chicago, 1906; at one time professor of otolaryngology at the Hahnemann Medical College and Hospital in Chicago; fellow of the American College of Surgeons; formerly village president and president of the school board; on the visiting staffs of the Mercy and Hackley hospitals in Muskegon; found dead June 19, aged 70.

H. C. Currie, Covington, Tenn. (licensed in Tennessee in 1913); died May 28, aged 59, of heart disease.

Louis P. Diehl, Woodsfield, Ohio; Starling Medical College, Columbus, 1882; member of the American Medical Association; died May 11, aged 86, of heart disease.

George W. Elliott, Wabash, Ind.; Curtis Physio-Medical Institute, Marion, 1895; died May 23, aged 72.

Siegfried Falkenstein, Kew Gardens, N. Y.; Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn, Prussia, Germany, 1904; served as physician at the outpatient department at St. John's Hospital, Long Island City; died in the Benedictine Hospital, Kingston, July 24, aged 65, of cerebral hemorrhage.

Walter Everette Gibson Jr., De Soto, Mo.; University of Tennessee College of Medicine, Memphis, 1927; member of the American Medical Association; served during World War I; formerly county coroner; died June 20, aged 46.

Zeeb Gilman, Redlands, Calif.; Dartmouth Medical School, Hanover, N. H., 1863; College of Physicians and Surgeons, medical department of Columbia College, New York, 1867; Civil War veteran; died June 5, aged 105, of senility.

Otho Napoleon Harden, Cornelia, Ga.; Atlanta Medical College, 1894; member of the American Medical Association; served as president and secretary treasurer of the Habersham County Medical Society; for four years chairman of the board of education of Banks County; represented Banks County in the state legislature for two terms; died May 30, aged 79, of chronic myocarditis.

Charlotte G. Hawk, Los Altos, Calif.; Woman's Medical College, Chicago, 1889; died May 3, aged 86, of coronary occlusion and generalized arteriosclerosis.

Frank O. Hunt, Zanesville, Ohio; Northwestern Ohio Medical College, Toledo, 1891; served as mayor of Adamsville; died June 9, aged 77, of carcinoma of the prostate.

William David Hunter, Monessen, Pa.; College of Physicians and Surgeons, Baltimore, 1901; found dead in bed May 6, aged 75, of coronary occlusion.

Dalton Kahn ✦ Toledo, Ohio; Toledo Medical College, 1911; member of the Radiological Society of North America, Inc., died recently, aged 61, of heart disease.

Denzil King, Milton, Pa.; Temple University School of Medicine, Philadelphia, 1925; member of the American Medical Association; interned at the Reading Hospital in Reading; medical examiner for the Pennsylvania Railroad at Indianapolis; died June 16, aged 47, of coronary thrombosis.

Alan Fesch Knisely, Lima, Ohio; Medical College of Ohio, Cincinnati, 1884; on the staffs of the Lima Memorial Hospital and St. Rita's Hospital, where he died June 12, aged 87, of acute uremia.

Arthur Rimmer Lewis ✦ Oklahoma City; Barnes Medical College, St. Louis, 1900; formerly state health commissioner; city superintendent of public health; died May 12, aged 73, of aneurysm secondary to coronary thrombosis.

James Russell Lowell, Marcellus, N. Y.; University of Buffalo School of Medicine, 1903; died April 21, aged 67, of myocarditis.

Harry Pierce Lynch, Monongahela, Pa.; Medico-Chirurgical College of Philadelphia, 1908; died June 3, aged 61, of carcinoma.

Clarence Herbert Mackey ✦ Lancaster, N. Y.; Cornell University Medical College, New York, 1910; an officer in the medical corps of the U. S. Army during World War I; served as health officer for the town and village of Lancaster and as school physician; died May 28, aged 59, of coronary occlusion.

H. Albert McMurray ✦ Youngwood, Pa.; University of Pittsburgh School of Medicine, 1905; for many years county coroner; on the staff of the Westmoreland Hospital, Greensburg; surgeon and roentgenologist for the Pennsylvania Railroad; died June 9, aged 67, of carcinoma secondary to x-ray burns on the right hand.

George Marsden ✦ New Bedford, Mass.; Johns Hopkins University School of Medicine, Baltimore, 1906; affiliated with St. Luke's Hospital; died May 20, aged 68, of coronary occlusion.

Charles L. Medley, Browns Valley, Ky.; Kentucky School of Medicine, Louisville, 1896; died in the Owensboro-Daviess County Hospital, Owensboro, May 13, aged 76, of cirrhosis of the liver and nephritis.

Jacinto John Menegas, Brockway, Pa.; Jefferson Medical College of Philadelphia, 1935; member of the American Medical Association; interned at St. Joseph's Hospital in Philadelphia; died in Du Bois (Pa.) Hospital June 5, aged 37, of cirrhosis of the liver.

James Murney Nicholson, Chicago; Rush Medical College, Chicago, 1902; served in the Spanish-American War and World War I; died June 23, aged 68, of bronchopneumonia, cerebral hemorrhage and diabetes mellitus.

Walter Wimberley O'Neil, Tullahoma, Tenn.; University of Tennessee College of Medicine, Memphis, 1937; member of the American Medical Association; died June 3, aged 31, of pneumonia.

John Eliot Overlander ✦ Springfield, Mass.; Harvard Medical School, Boston, 1909; served during World War I; for many years on the staff of the Springfield Hospital; died May 26, aged 65, of coronary thrombosis.

Hyman Harry Peril ✦ Shamokin, Pa.; Jefferson Medical College of Philadelphia, 1917; on the staff of the Shamokin Hospital; died June 7, aged 50, of heart disease.

James Francis Quest ✦ Boston; University of Vermont College of Medicine, Burlington, 1906; died May 27, aged 67.

James Banks Rankin, Hollis, N. Y.; Detroit College of Medicine, 1891; died June 25, aged 83, of arteriosclerosis.

Thomas Harvey Ransom, Burbank, Calif.; Central College of Physicians and Surgeons, Indianapolis, 1891; health officer and city physician; died in the Physicians and Surgeons Hospital, Glendale, June 3, aged 75, of coronary disease.

Frank J. Rosenberg, Lexington, Neb.; Eclectic Medical Institute, Cincinnati, 1873; member of the American Medical Association; honorary member of the Nebraska State Medical Association; past president of the Dawson County Medical Society; served as mayor, member of the school board and member of the Methodist Hospital board; died May 30, aged 95.

John Rouse, Philadelphia; Jefferson Medical College of Philadelphia, 1904; died May 24, aged 70.

William H. Sapp, Lancaster, S. C.; Medical College of the State of South Carolina, Charleston, 1893; died in Landrum May 23, aged 80.

George H. Shawaker, Columbus, Ohio; Ohio Medical University, Columbus, 1902; affiliated with the Columbus State School; found dead May 21, aged 66, of cerebral hemorrhage.

Ellsworth Sheldon, Fostoria, Ohio; Starling Medical College, Columbus, 1903; served during World War I; on the staff of the Fostoria City Hospital; died June 10, aged 68, of carcinoma of the esophagus and stomach.

Edgar Poe Shelton, Dripping Springs, Texas; Hospital College of Medicine, Louisville, 1897; member of the American Medical Association; served in the state legislature; died in San Marcos in May, aged 78.

William M. Sheridan ✦ Albuquerque, N. M.; Chicago Homeopathic Medical College, 1897; died May 9, aged 79, of injuries received when struck by an automobile.

David J. Smith, Osceola, Neb.; Omaha Medical College, 1898; died in St. Francis Hospital May 23, aged 82.

Charles Aloysius Speissegger, Charleston, S. C.; Medical College of South Carolina, Charleston, 1905; member of the American Medical Association; honorary member of the South Carolina Medical Association; died in the new Roper Hospital June 2, aged 65, of angina pectoris.

Charles Melford Stemen, Kansas City, Kan.; Fort Wayne College of Medicine, 1887; member of the American Medical Association; on the staff of the Bethany Hospital; died May 29, aged 79, of carcinoma of the prostate.

Harry Michael Robert Thometz ✦ Oak Park, Ill.; Rush Medical College, Chicago, 1911; formerly associated with the U. S. Public Health Service; died in the Swedish Covenant Hospital, Chicago, June 16, aged 57, of coronary thrombosis.

Francis Marion Vaughan, Columbus, Miss.; Louisville (Ky.) Medical College, 1891; a director of the First Columbus National Bank; for many years a member of the Lowndes County Democratic Executive Committee, of which he had been chairman; died June 11, aged 75, of heart disease.

Dean Thomas Verplank, Gary, Ind.; Indiana University School of Medicine, Indianapolis, 1943; interned at the Indianapolis City Hospital in Indianapolis; on the staffs of the Methodist and Mercy hospitals; found dead May 27, aged 31.

Bismarck Von Wedelstaedt ✦ Long Beach, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; served as secretary of the Harbor Branch of the Los Angeles County Medical Society; died May 19, aged 75.

Frank Michael Walsh, St. Johnsbury, Vt.; Baltimore Medical College, 1905; member of the American Medical Association; on the staffs of the Brightlook and St. Johnsbury hospitals; for many years medical examiner for the Metropolitan Life Insurance Company; died June 9, aged 72, of leukemia and sarcoma.

Fred Gail Warner ✦ St. Louis; St. Louis University School of Medicine, 1906; died in St. Anthony's Hospital June 4, aged 70, of arteriosclerotic heart disease.

Otto Fred Warning, Chicago; Jenner Medical College, Chicago, 1905; formerly member of the school board; died June 15, aged 72, of carcinoma of the stomach.

Melchior Whise, Chicago; Bennett Medical College, Chicago, 1892; Rush Medical College, Chicago, 1893; past president of the Northwest Side Branch of the Chicago Medical Society; on the staff of the Lutheran Deaconess Hospital, where he died June 3, aged 76, of cerebral hemorrhage.

Wayne Addison Yoakam, Homer, Ohio; Harvard Medical School, Boston, 1920; diplomate of the National Board of Medical Examiners; formerly instructor in obstetrics at the Wayne University College of Medicine in Detroit, where he was formerly on the staffs of the Henry Ford and Herman Kiefer hospitals; died in the Mount Vernon Hospital-Sanitarium, Mount Vernon, May 10, aged 51, of toxic myocarditis and toxic nephrosis caused by extensive third degree burns.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 3, 1946.

Struggle of British Medical Association Against National Health Service Bill

The struggle of the British Medical Association against the national health service bill is approaching a crisis. The membership of the association has increased from 38,000 in 1938 to 52,000 and now represents 80 per cent of the profession. This increase was due to the apprehension aroused by the proposal. The annual representative meeting of the association, which occupied three days, was largely devoted to the course to be followed by the association, whose position was ably stated by Dr. Dain, chairman of the council. Going back three years, he said that when a whole time service was first proposed the representatives of the profession had arguments and discussions with the two ministers of health of the coalition government. They pointed out to the ministers the disadvantages to the public of such a service and did get a certain way towards agreement. But on the accession of the socialists to office their minister of health, Mr. Bevan, adopted the framework left by his predecessor. To this he added the principle of nationalization, which made an enormous difference. He refused to negotiate on the principles of the bill but was willing to talk on everything else. These principles were the state ownership of hospitals, the destruction of the good will of general practices, the directing of practitioners where they shall go and preventing them from moving without permission, and their remuneration in part at least by salary. By these steps the practitioner would be taken under control in a state service. None of these additions would improve the service to the patient and not one was necessary to its efficiency. They served no purpose except to carry out socialist ideals. The first effect of the ownership of hospitals would be that there would be no possibility of practice by consultants and specialists outside the new service. They could not practice without access to beds, but beds, both public and private, would be under the control of the minister. Thus an important section of the profession would, for practical purposes, become servants of the state and their opportunities for independent practice would become almost infinitesimal.

The general practitioner would be brought under control in three respects. He would not be allowed to buy or sell practices. He thus lost his good will if he desired to retire or leave the neighborhood, though the minister had promised compensation. It was claimed that there was no active direction and that the practitioner entering practice or desiring to change his area was merely told where he must not go. But he had to get the consent of two committees and of a central body, which was an easy commencement of control. The general practitioner in a national service should be employed by and responsible to the patient, and the profession was opposed to payment by any form of salary which meant the transference of responsibility to the person who paid the bill. The minister appreciated that the principle of free choice by patients—a public matter in which he could not afford to offend—would be interfered with by a salaried service. But he proposed to pay doctors a certain proportion by salary, so that he would have a new form of control. He did not think the profession was "ripe" to become salaried officers. In the passage of the bill through the House of Commons the minister had proclaimed the complete right to do everything himself. He was the complete and uncontrolled dictator. He would determine the constitution of every committee and council to be set up under the act. He had not even allowed to escape from his power the election of chairmen. In May the representative body of the association almost unanimously decided four things: (1) no control over doctors in the areas in which they should practice; (2) against state ownership of hospitals; (3) that doctors should retain the good will of their practices; (4) against any method of remuneration by capitation fee. Now had come the time when conflict was inevitable; one side or the other must give way. The minister constantly said that we were a divided profession and that this had become a political question. Some of us were socialists. Perhaps these would be prepared to work the scheme because it embodies the socialistic principle. But the others thought that the scheme would be a great disadvantage to the service the public would get. The decision had to be made not by the profession acting through the council of the British Medical Association but by each individual member. The first problem was whether there should be any further negotiations unless the principles were conceded.

In the discussion which followed, general agreement was expressed with the chairman's views. The following resolution was adopted by the meeting: "That a referendum of the whole profession should be taken soon on the simple issue of whether negotiations with the minister should take place or not and that the meeting recommends to the council the desirability of the plebiscite including personal contact with each member of the profession as soon as it can be arranged."

NETHERLANDS

(From Our Regular Correspondent)

AMSTERDAM, July 23, 1946.

Food Rationing in the Netherlands During the War

In the Netherlands, as in other continental countries, the quantities of food available for the civilian population were rationed by the Germans. The food rations decreased from the beginning till the end of the German occupation. During the last months of the occupation, before the liberation by the British, Canadian and United States armies, the rations for the Dutch civilian population consisted of 10 Gm. of fat, 16 Gm. of protein and 112 Gm. of carbohydrates. The total calories with this ration were 618 daily.

After the liberation importations and increased production in the country itself made it possible to better the condition of the population by increasing the food rations. During the spring and summer of 1946 the official rations procured a total of 2,112 calories (49 Gm. of fat, 61 Gm. of protein and 352 Gm. of carbohydrates). The food contains on the whole a sufficient quantity of vitamins, but vitamins A, D and C are regularly given to the children.

Histiogenesis of Autonomic Nerve Plexus in Chick Embryo Intestine

Dr. F. J. Keuning presented a dissertation to the faculty of medicine of Groningen September 1945. His technic consists in tissue culture of embryonic chick intestine after ninety-six hours' incubation, especially of the esophagus, consisting of an epithelial tube and mesenchyma, without smooth muscle and nervous tissue. The perfusion culture method described by de Haan was used, and nerve tissue was identified by Bodian-strong protein silver impregnation. Where surrounding tissue, including vagus ganglions, was included in the culture, these ganglions developed to giant autonomic nerve centers, establishing a relation to an autonomous nerve plexus whose differentiation occurs after a few days culture. There is no proliferation of constituent cells or immigration of embryonic nerve cells from the ganglions into the tubular organ. Therefore the plexus can arise only from the mesenchymal elements belonging to the wall of the embryonic tube. In fact, from

these elements a nervous plexus can develop when no preformed ganglionic elements are included in the cultivated tissue. The nerve plexus uses the protoplasmic bridges in the existing mesenchyma as sheath plasmodium to lead the outgrowing fibers over to the other cells of the plexus. Schwann cells are absent in those cultivated tissues which do not include vagal ganglionic material at the beginning of the culture. Obviously the syncytial mesenchyma gives rise to the nervous plexus in the intestine, yielding neuroblasts and their consecutive junction with fibers. Cultivated intestine, while immobile prior to the appearance of neuroblastic elements, becomes peristaltically active after the appearance of such elements and smooth muscle. Yet the extension of the nerve plexus from cranial to caudal direction lags behind the extension of peristaltic activity. These facts indicate that peristalsis can precede the establishment of neuromuscular connections, leaving open the possibility of humoral transference of impulses from primitive nerve material, whose existence is established prior to the appearance of motor activity. At a later stage, when neural connections appear over the whole length of the esophagus in tissue culture, the neural influence on motor activity seems irrefutable.

Cyclotron Installation at Amsterdam

A giant cyclotron invented by Professor Ernest O. Lawrence, was built during the occupation in the Philips plants at Eindhoven. The Society for Fundamental Researches of Matter, founded at Amsterdam, includes such famous Dutch scientists as Professors J. Clay and J. Sizoo. The director is Dr. C. J. Bakker of the Philips plants at Eindhoven, one of the constructors of the giant cyclotron. The giant cyclotron weighs 215 tons and is placed in a specially constructed hall. The radiation will be used for research on cancer, division and development of cells, cell mutations and other biologic and medical subjects.

Bovine Type of Tuberculosis During the War

Professor Dr. Charlotte Ruys, head of the laboratories for public health at Amsterdam, stated, that, although tuberculosis infection was more frequent during the war as a result of malnutrition, human type of the tubercle bacillus was found in most cases. The bovine type is spread especially by milk, which was rationed during the war, with resultant diminished consumption.

Before the war the bovine type was found more often in children than in adults, but during and after the war the difference in the incidence of the bovine type in adults and children decreased.

Gifts of the American Red Cross

The Dutch Red Cross received 20 million units of penicillin as a gift of the New York Botanical Gardens, which expressed in this way its thanks for the tulip bulbs presented by the Dutch government. The Dutch Red Cross received also eighteen complete surgical installations as a gift of the American Red Cross.

Seventy-Fifth Anniversary of Cornelia de Lange

On the occasion of the seventy-fifth anniversary of Dr. Cornelia de Lange, former professor of pediatrics at the University of Amsterdam, a special edition of the *Nederlandsch tijdschrift voor Geneeskunde* was dedicated to her life and work.

Medical Students at Amsterdam

Eight hundred and eighty students of medicine matriculated at the University of Amsterdam for the 1946-1947 session. Before the war the number was 160 but during the last years of the war studies were not possible, so that many students had to wait.

Miscellaneous

Several faculties will be added to the University of Amsterdam, including dentistry and veterinary medicine.

Through unofficial channels of the public press it has been learned that the government intends to embark on a scheme of national planning and organization of creative research.

ITALY

(From Our Regular Correspondent)

FLORENCE, July 15, 1946.

Meeting of the Medicosurgical Society

The Società medico-chirurgica of Bari recently met, Dr. Luigi Ferranini presiding. Dr. Bertaccini described statistical studies on venereal diseases in Bari before, during and after the war. The increase of venereal diseases during the war was not as acute as it was feared it would be during occupation by different armies. The highest frequency was in 1943, after which the number of cases declined continuously although slightly. Syphilis was more frequent than any other venereal disease. The index of gonorrhea was marked by decline after 1938. The frequency of chancroid greatly increased in 1943 and has diminished since 1945.

Dr. Maselli-Campagna reported studies on the influence of marconitherapy on the formation of callus on fractured bones. Short, weak athermic waves stimulate callus formation and also the reticuloendothelial system, the latter reaction being proportional to local biochemical changes.

Dr. Rucci told of the good results from the combination of antitetanic serum therapy, magnesium sulfate and a barbiturate in 50 cases of tetanus observed in the Bari Medical Clinic from 1939 to 1945.

Dr. Catalano presented 3 patients with fibrous pseudoarthrosis of the long bone successfully treated with autoplastic grafts. The author's technic of choice is bipolar central implication of a tibial fragment taken from the patient's tibia and including tibial bone, endosteum and tibial bone marrow.

Effects of Thiamine Hydrochloride

In THE JOURNAL, February 23, Reingold and Webb reported a death following the intravenous injection of thiamine hydrochloride. Similar, although not necessarily fatal, cases were discussed at the meeting of the Accademia delle Scienze di Ferrara, which was held on April 4. Some physicians reported postdiphtheric neurologic complications, especially polyradiculoneuritis, in the course of the 1945 epidemic of diphtheria. The speakers believed that these complications were due to particular debility of the nervous system because of national malnutrition. Dr. Rietti reported acute and in some cases suddenly fatal accidents after intravenous injections of relatively high doses of vitamin B_1. It should be noted that in Italy the so-called average dose contains 1,000 units per cubic centimeter. The high dose of vitamin B_1 contains 5,000 international units and the very high dose contains 10,000 units. The concentration of thiamine is 30 mg. per cubic centimeter in Italian solutions and 50 mg. in American solutions. The speaker pointed out the convenience of performing a cutaneous test for allergy before resorting to intravenous administration of vitamin B_1. Mussella observed unpleasant reactions to intramuscular injections of thiamine in women in the menopause who had thiamine and autohemotherapy.

Deaths

Dr. Mario Donati of Milan recently died in Switzerland at the age of 60 years of angina pectoris.

Dr. Adolfo Ferrata of Pavia recently died at the age of 66 of angina pectoris. He specialized in blood diseases. At the last Italian Congress of Medicine and Surgery, which was held in Rome in 1942, he was an official speaker and presented an article on leukemia and pseudoleukemia.

Medical Congress

A medical congress will be held at Florence in October. The official topics are tumors of the colon, epidemic hepatitis and modern conceptions of malaria.

Correspondence

DEMEROL

To the Editor:—In THE JOURNAL, July 13, H. J. Anslinger, referring to my article on Demerol in the *Reader's Digest* of June 1946, states that the drug's addiction properties were found to be similar to morphine in the U. S. Public Health Service Hospital at Lexington, Ky., and that this was confirmed by others who experimented with it. The studies to which Mr. Anslinger clearly refers are those published by Dr. C. K. Himmelsbach. The essential point of Dr. Himmelsbach's several papers is that Demerol does not possess addicting properties similar to those of morphine but even less than those of codeine. For instance, he states (*J. Pharmacol. & Exper. Therap.* **75**:64 [May] 1942), "Not only was the Demerol abstinence syndrome less severe than that of morphine or codeine by objective criteria, but the subjective complaints were markedly reduced."

Since addiction liability to anything from coffee to morphine is always a question of degree, the important point is that Demerol and morphine are not similar in the addicting properties but on the contrary are widely dissimilar. It should be noted that Himmelbach's studies employing enormous doses of Demerol were made on subjects committed to Lexington because of morphine addiction, and, furthermore, Demerol was used to cure them of their addiction. The published findings of all other investigators are in consonance with those of Himmelsbach, namely, that Demerol is less addicting than even codeine.

Mr. Anslinger states that my article "adroitly" makes no reference to the work of Dr. C. K. Himmelsbach and that of Drs. Hecht, Noth and Yonkman. As a matter of fact, my statements on this phase of the subject are largely derived from the published statements of these investigators, as well as those of Dr. R. C. Batterman, and I am content to have any one interested study their original works and compare what they have said in erudite scientific language with what I have written in words that the layman also can understand.

Dr. F. F. Yonkman and Dr. R. C. Batterman (who collaborated with Himmelsbach) have both written you defending the scientific validity of my article and reiterating their statements that no case of primary addiction to Demerol has been reported.

Mr. Anslinger reports that Demerol was placed under federal narcotic control by the Congress because of evidence given before that body of its dangerous properties. In making this statement Mr. Anslinger was certainly not unaware of the fact that no public announcement of the hearings was made, and the scientists who had worked with Demerol were neither notified of the hearings nor invited to be present. They were star chamber proceedings in which Mr. Anslinger presented what evidence he thought the Congress should have.

Mr. Anslinger states that the information in my article is reckless and dangerous. Mr. Anslinger further states that my article is similar to that which appears in the circular distributed by the manufacturer. It is true that, along with basic scientific contributions, I read the circular which the manufacturer distributes. However, since Demerol is accepted by the Council on Pharmacy and Chemistry of the American Medical Association, it is fair to assume that the information in the circular has been found acceptable to that body even though Mr. Anslinger states that it is similar to the information contained in my article, which he considers reckless and dangerous.

Mr. Anslinger states that his files contain numerous cases of addiction involving the use of Demerol. I have no doubt that this is true considering the unscientific, uncontrolled reports that flow into the files of governmental bureaus dabbling in science. If the situation is as serious as Mr. Anslinger implies, it is indeed strange that not a single undisputed case of primary addiction to Demerol has yet been reported in medical literature.

PAUL DE KRUIF, PH.D., Holland, Mich.

To the Editor:—In Mr. de Kruif's article on Demerol in the *Reader's Digest* he admits that "the possibility does exist that the relaxing action of the drug can result in a person's desire to continue its use." However, he goes on to state that "this does not mean addiction, for if the Demerol is withdrawn there are no bad results"(!) As Commissioner Anslinger pointed out in his letter to you, Mr. de Kruif either ignored or was not familiar with studies which have demonstrated the production of physical dependence by Demerol in man, whether or not previously addicted to one of the opiates. I have been advised by Dr. John D. Reichard that a patient with primary Demerol addiction was recently admitted to the Public Health Service Hospital, Lexington, Ky., for treatment.

Were Demerol not a prescription item, and had Commissioner Anslinger not had the foresight to bring it under narcotic control, Mr. de Kruif's inadequate description might do a lot of harm. Even so, it is unkind to raise falsely the hopes of sick people.

C. K. HIMMELSBACH, M.D., Chicago.

To the Editor:—Mr. De Kruif states in his letter that the scientists who worked with Demerol were neither notified of the Congressional hearings held in connection with the introduction of the bill to bring isonipecaine under the provisions of the federal narcotic law nor were they invited to be present. As a matter of fact the president of Winthrop Chemical Company was advised of the hearings and I suggested that he and the scientist who had worked with Demerol could present any evidence they desired. However, he said he preferred not to attend the hearings.

As evidence of the addiction sustaining and habit forming propensities of Demerol, I attach a brief summary of some of the cases involving addiction to Demerol which have come to the attention of this bureau.

H. J. ANSLINGER, Washington, D. C.
Commissioner of Narcotics.

CASE HISTORIES INVOLVING ADDICTION TO DEMEROL

R. B., an alleged medical addict of Grand Forks, N. D., had been using morphine. His physician prescribed Demerol to overcome the effects of the withdrawal of morphine. He continued to use Demerol intramuscularly, using approximately two ampules of 2 cc. of Demerol each daily.

A physician aged 61 of Hot Springs, Ark., had been a drug addict for many years. In 1942 he was using approximately 11 grains (0.7 Gm.) of morphine per day. He took treatment and apparently effected a cure. An investigation in March 1946 revealed that he had written numerous prescriptions for Demerol without being registered under the federal narcotic law. He stated that he started using Demerol when it was first introduced and continued after it was placed under the provisions of the federal narcotic law. During a period of twelve months he obtained unlawfully and used 1,993 tablets of Demerol (50 mg.) and 2,752 ampules of Demerol (100 mg.).

Dr. X of Benton, Ark., is alleged to have a medical need for some narcotics. He had been using Pantopon, Demerol, Dilaudid and morphine. In a report dated Feb. 28, 1946 it is stated that he submitted to treatment of his ailments, and withdrawal of morphine (4 grains [0.25 Gm.] per day) was accomplished in five days. Demerol in large dosage was used to control the symptoms of morphine withdrawal. Three days after the morphine was stopped, reduction of the Demerol was commenced. When the dosage was reduced to 20 cc. per day withdrawal symptoms began again. He was given a supply of Demerol and permitted to go home. Three days later he sent word that he was out of Demerol and wanted more. He had increased the dosage since going home.

In a report dated Oct. 31, 1944 L. A. H., Denver, was reported for forging prescriptions calling for Demerol. Formerly he used morphine but was taken off and shortly after was given Demerol, which he has taken ever since. Apparently he is tuberculous and his physician decided he was getting too much and cut his prescriptions to 18 ampules (100 mg.) per week. This did not satisfy him and he began to increase his supply, forging prescriptions.

In a report dated July 21, 1944 H. S. M., Detroit, was reported for forging and uttering prescriptions calling for Demerol. He was reported to be addicted to Demerol but not to other narcotic drugs.

I. K., a woman aged 34, a drug addict, was arrested on April 10, 1945 for obtaining narcotic drugs under false names. She has taken several treatments for addiction and on her return from her last treatment went to a physician friend who prescribed Demerol for her. She received a sentence of three years on Oct. 25, 1945.

A physician aged 27 of Columbus, Ohio, was reported on Jan. 26, 1945 as being addicted to Demerol. He stated that he first used Demerol about the first of July 1944, because he had influenza and did not feel good. At first he used one ampule every fourth or fifth night. As time went on he used one every night until between the last of October 1944 and Nov. 20, 1944 he used five or six ampules every night. On Nov. 20, 1944 he submitted to treatment for his addiction. He returned to his home about Dec. 23, 1944. A week later he resumed the use of Demerol. He again submitted to treatment and in an interview on Feb. 18, 1946 was found to be in good health and not using drugs.

In a statement dated in April 1946 Mrs. H. E. J., a registered nurse, related that in February 1945 she was troubled with a heart condition while in a hospital. Infrequently she would take very small injections of any narcotic which had been issued for a patient. In February 1946 she fell, injuring her arm. At this time she was employed by a doctor who sent her to another doctor for treatment and she was given Demerol. After eight days of treatment she was operated on and used Demerol constantly for pain and also while in the hospital. In the middle of March she returned to work and had acquired a desire for Demerol. On eight or nine occasions she took a prescription blank from her employer and forged them, obtaining 30 cc. of Demerol on each.

In a report dated June 10, 1946 from Chicago, there is related the history of a patient being treated for acute iritis. She was allergic to morphine, so her physician, considering a narcotic necessary, began to give Demerol about four months previous to the date of the report. The drug was required in increasing dosage up until about the first of June 1946, at which time the patient was getting approximately 25 ampules of 100 mg. each week. The physician suspected addiction and arranged to substitute a nonnarcotic without the patient's knowledge. Immediately she complained of her pain and begged the physician for more Demerol.

A case of Demerol addiction was reported in the *Bulletin of the Menninger Clinic* **8**: 122 (July) 1944. The patient was a woman aged 38, a housewife, well educated and a former teacher. She had had a series of major operations and hospitalizations. It was known that she was addicted to Pantopon in 1936. She learned about Demerol and began with a dose of 50 mg. a day but increased the quantity and admitted that she had taken 600 mg. a day on several occasions. During the few months prior to her admission to the clinic she had a craving only for Demerol. On the withdrawal of Demerol she exhibited all the usual symptoms accompanying the withdrawal of narcotics. The symptoms were relieved as soon as Demerol was taken again.

J. C. W. Jr. in a statement dated May 27, 1944 said that he had been addicted to morphine since December 1942, his ailment being chronic asthma. He was given Demerol in April 1944 while undergoing treatment for his morphine addiction. He left the sanatorium on May 3, 1944 and continued to take Demerol. By May 15, 1944 he had such a craving for Demerol that he returned to the sanatorium for treatment. He stated further that in his opinion Demerol affected his health worse than any drug he had ever used. He said none had ever produced the craving in so short a period of time as did Demerol.

In a case dated May 13, 1946 a physician aged 37 was reported for issuing prescriptions for Demerol in the names of alleged patients and then using the Demerol for his own addiction. In a signed statement he stated that he had been using Demerol for about six weeks. He said he had arthritis and did not think Demerol was habit forming. He admitted that he had become addicted and was taking about 60 cc. a day.

A physician aged 34 of Downey, Calif., was reported on June 17, 1946 for being addicted to Demerol. In a statement dated June 24, 1946 he said that he had suffered for many years from bronchial asthma. In January 1945 he had a severe attack and was hospitalized for about five days. He was given Demerol in doses of 100 mg. When he left the hospital he did not immediately continue the use of Demerol but at the first return of severe symptoms he did take more Demerol. He said "From there on the story is I imagine typical of people who start using narcotics. I used a lot of Demerol in increasing amounts and on occasions when I was out of Demerol used dilaudid, morphine and other narcotics that I had at hand."

On May 27, 1946 a woman aged 39, the mother of three children, was charged with forging a prescription for twenty-four ampules of Demerol of 100 mg. each. In a statement to a narcotic agent she said that about six months previously she had begun to have abdominal pains and went to a physician. He advised her that she was going through the menopause and began giving her prescriptions for Demerol. At first they were for twelve ampules and later for twenty-four. In time she found that she had a craving for the Demerol and called the doctor to inquire whether it was habit forming. She was advised that it was not habit forming, which she now knows was erroneous.

On July 3, 1946 a Philadelphia physician aged 42 was reported for writing prescriptions for Demerol in the names of various alleged patients and obtaining the drug for his own addiction. He underwent two unsuccessful attempts to cure his addiction in December 1945 and February 1946. He is at present undergoing treatment. He was taking 300 to 400 mg. of Demerol per day when he last underwent treatment. In a statement dated June 21, 1946 he said "During the height of a severe attack of exfoliative dermatitis due to extreme allergy of the skin I started taking Demerol for the relief of itching and to secure some sleep. Unfortunately, before the attack subsided primary addiction to the drug was noted and, contrary to the literature of the manufacturer, the dosage requirement had to be increased."

SENSITIVITY TO TRIDIONE

To the Editor:—The analgesic, sedative, and anticonvulsive properties of Tridione, Abbott (3,5,5-Trimethyloxazolidine-2,4-dione), are at present undergoing experimental and clinical investigation (*J. Pharmacol. & Exper. Therap.* **81**:402 [Aug.] 1944). To date no untoward reactions have been reported with the exception of a rash in 2 cases and an occasional case of blurring of vision or changes in color perception (believed to be functional, completely reversible after discontinuance of the drug, and showing no optic nerve damage in experimental animals). The following neutropenic response has not previously been noted:

A white woman aged 25, seen in the dispensary May 6, 1946, complained of submandibular tenderness and swelling. The parotid glands were not tender or swollen, and Stensen's ducts were not inflamed. The temperature was normal. Her gums were in very poor condition. Oral hygiene was poor. No further physical findings were discovered.

The patient was married and had one child. She had had attacks of epilepsy since about 6 years of age. In 1941 she was having six attacks a month. They had gradually got worse. They were fairly well localized, of jacksonian type and of a myotonic nature, with considerable confusion following the attacks.

The patient had been taking moderately large doses of phenobarbital and bromides for about five years. On April 18 she began to take Tridione 10 grains (0.6 Gm.) before each meal. At this time she was also receiving phenobarbital 1½ grains (0.1 Gm.) twice a day and a bromide preparation containing a minute amount of arsenic. Visual disturbances and a "dopey feeling" were complained of on April 24 and the dosage of Tridione was cut in half.

Blood examination on May 6 revealed red blood cells 4,260,000, hemoglobin 12.8 Gm., white blood cells 1,900, 52 neutrophils, 42 lymphocytes and 6 mononuclears; moderate shift to left.

Tridione was stopped. Phenobarbital and bromides were continued. Liver extract, vitamin B complex and pyridoxine were added to the medications.

Blood examination on May 8 revealed white blood cells 2,600, 47 neutrophils, 42 lymphocytes and 11 mononuclears.

May 14 the white blood cells numbered 5,000.

On May 14 the patient expressed anxiety, feeling that a seizure was imminent. She had had no seizure since taking Tridione, although she had not been completely controlled at any other time in the past five years. For this reason Tridione 5 grains (0.3 Gm.) twice a day was resumed.

May 18 the white blood cells numbered 3,550, with 65 neutrophils, 32 lymphocytes, 1 mononuclear and 2 eosinophils.

May 22 the white blood cells numbered 900, with 13 neutrophils, 80 lymphocytes, 6 mononuclear and 1 eosinophil.

Tridione was stopped and a bromide preparation without solution of potassium arsenite was substituted for the prescription she had been taking.

May 25 the white blood cells numbered 1,850, with 16 neutrophils (7 segmented and 9 nonsegmented), 68 lymphocytes, 13 mononuclears, 2 eosinophils and 1 basophil.

May 28 the white blood cells numbered 3,500, with 50 neutrophils, 44 lymphocytes, 5 mononuclears and 1 basophil.

May 31 the white blood cells numbered 6,250.

June 8 the white blood cells numbered 5,900.

June 22 the red blood cells numbered 4,520,000, hemoglobin was 87 per cent, the white blood cells numbered 4,800, with 68 neutrophils, 27 lymphocytes, 1 mononuclear and 4 eosinophils.

At present the patient is in good health and has no complaints except for the failure of the phenobarbital and bromide to suppress her seizures adequately. It is believed that the neutropenia resulted from a sensitivity to Tridione. Although the patient received a minute amount of arsenic, she had done so for years with no ill effect.

ROBERT J. GREAVES, Lieutenant, M. C., A. U. S.

Medical Motion Pictures

The American Medical Association has been actively interested in medical motion pictures for many years. In 1928 and again in 1930 the House of Delegates appointed committees to study the problem. The Bureau of Exhibits has developed a source file of motion pictures and has maintained a small film library for the past fifteen years. In 1945 the Board of Trustees, at the instigation of the Committee on Scientific Exhibit, appointed a Committee on Medical Motion Pictures to make suggestions and report back to the Board. At the San Francisco session the Trustees accepted the recommendations and appointed the following committee:

Three year period:
Dr. Morris Fishbein, Editor, THE JOURNAL.
Mr. Tom Jones, University of Illinois College of Medicine, Chicago.

Two year period:
Dr. Dean Smiley, Bureau of Health Education, A. M. A.
Mr. Ralph P. Creer, Bureau of Exhibits, A. M. A.

One year period:
Dr. W. L. Benedict, Mayo Clinic, Rochester, Minn.
Mr. John Bradley, Director, Motion Picture Section, Library of Congress, Washington, D. C.

Ex officio members:
Dr. C. W. Roberts, Chairman, Committee on Scientific Exhibit.
Dr. Thomas G. Hull, Director, Scientific Exhibit.
Dr. Victor Johnson, Secretary, Council on Medical Education and Hospitals.

The purpose and scope of this committee is outlined briefly as follows:

1. To promote a more widespread and effective utilization of medical motion pictures and to stimulate research in this field.

2. To expand the present library of medical and public health films now available on a loan basis through the American Medical Association. Motion pictures dealing with basic subjects that are not available through other sources will be selected. Additional copies of the most popular prints in the present library will be purchased so that a wider and more rapid distribution will be possible.

3. To publish critical reviews of medical motion pictures in THE JOURNAL and *Hygeia* from time to time. These reviews will include a brief description of the film content, a professional and technical appraisal, a comment as to the recommended audience level and a note regarding the availability of the films. Current news items of interest to the medical profession as well as comments on the intelligent use on motion pictures will also appear in THE JOURNAL.

4. To expand the source file which has been started. Eventually this file will contain informative data on motion pictures dealing with all phases of medicine as well as health films for the public. Films not available for loan or purchase will not be listed. The purpose of this file is to provide on request authentic information relative to the types of films available to the medical profession on any given subject. The compilation and maintenance of a file of this type is a sizable undertaking and contributions will be welcome. The following data should be furnished:

Title of film, name of author, film size (16 mm. or 35 mm.), sound or silent, color or black and white, exact length of film, brief summary of film content, audience level and availability.

From the information gathered, it will be possible to give some guidance to individual physicians and to commercial and other agencies interested in the production of timely films that are in demand by the medical profession. As far as facilities permit, it is planned to cooperate to the fullest with medical schools, state and county medical societies, government departments, foreign countries and other groups interested in the dissemination of knowledge and information on the subject of medical motion pictures.

It is anticipated that additional activities will be added as the program develops.

All communications on this subject should be addressed to the Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

Treatment of the Major Neuralgias. Directed by Roland M. Klemme, M.D., Professor of Surgery, St. Louis University. Procurable from Medical Film Guild, 16 West 57th Street, New York. 16 mm. sound, color, 52 minutes. Produced by Medical Film Guild for the Singer Sewing Machine Company in 1945.

This film is a thoroughgoing presentation of the causes, diagnosis and treatment of trigeminal, glossopharyngeal and sphenopalatine neuralgia. From the mechanical standpoint it leaves little to be desired. The color photography is excellent, the operating fields are clear and the tissues are well differentiated. The sound track is clear, and the narrator's voice quite effectively and inobtrusively supplements and explains the pictorial presentation.

Only one technic is shown in the selective sectioning treatment of the trigeminal neuralgia, but other acceptable technics at the different levels are briefly illustrated. Insufficient emphasis is laid on the difficulties that may be encountered especially by the beginner. The first part of the film deals with the operation for glossopharyngeal neuralgia and the anatomy of the glossopharyngeal nerve. This part of the film is not up to the standard of the part devoted to trigeminal neuralgia.

It would appear that the chief use of the film will be to point out to medical students and to the medical profession in general what the neurosurgeons have to offer in the way of alcoholic injection and selective nerve sectioning for the relief of the major neuralgias. If the handicap of the excessive length can be somewhat overcome by means of interpolating a pause or pauses in the showing, the film can be highly recommended for this purpose. This picture is an important contribution to medical education.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals, in General: Exclusion of Practitioners from Visiting Staff.—The plaintiff physician sought an injunction to restrain the defendant hospital from interfering with his right to treat patients in its private and semiprivate rooms. From a decree for the defendant dismissing the plaintiff's complaint, the plaintiff appealed to the Court of Appeals of Maryland.

The plaintiff alleged that he had been practicing medicine since 1914 and had been a member of the visiting staff of the Sinai Hospital for many years. This entitled him under the hospital by-laws to treat patients in either private or semiprivate rooms. In November 1943 plaintiff was notified that he had been removed from the visiting staff and placed on the courtesy staff, which entitled him to treat patients only in private rooms. This was done, apparently, pursuant to a hospital by-law providing that appointment to all divisions of the medical staff should be made for only one year.

The plaintiff first contended that the hospital by-laws are arbitrary and discriminatory. A corporation organized by permission of the legislature, supported largely by voluntary contributions, and managed by officers and directors who are not representatives of the state or any political subdivision, is, said the court, a private corporation, although engaged in charitable work or performing duties similar to those of public corporations. So a hospital, although operated solely for the benefit of the public and not for profit, is nevertheless a private institution if founded and maintained by a private corporation with authority to elect its own officers and directors. Using this test, the court continued, we find that the defendant is a private institution. It was organized as a private corporation and is not an instrumentality of the government for the administration

of public duties. It is exempt from taxation on its hospital building and equipment and receives appropriations from the state and the city of Baltimore, but it cannot be questioned that the legislature has ample power to make appropriations to a private corporation established for the maintenance of a hospital. The powers and duties of the officers of a private corporation are regulated by its charter, constitution and by-laws. It is a general rule that a court of equity will not interfere with the internal management of a corporation, unless the act complained of is fraudulent, illegal or ultra vires. Continuing, the court said that the directors of a private hospital corporation, having power to appoint members of its medical staff, have the authority to remove them from the staff also. It has never been the policy of the state of Maryland to interfere with the power of the governing body of a private hospital to select its own medical staff. In fact, in the act of 1945 conferring authority on the state board of health to prescribe standards of safety and sanitation for all hospitals in the state the legislature expressly provided that nothing contained in the act shall affect the right of each institution to employ its own personnel and staff. It is clear, therefore, concluded the Court of Appeals, that since the by-laws of the defendant hospital provide that appointments to all divisions of the medical staff shall be made for only one year, the plaintiff had no right to object to his removal from one of the divisions of the staff. Furthermore, the court continued, there is no basis for the allegation that the rules and regulations of the defendant are illegal and void. The charter of the corporation provides that its affairs shall be managed by a board of officers consisting of a president, vice president, treasurer and twelve directors. The by-laws confer on the board of officers full authority to appoint the physicians and surgeons on the medical staff and also empower the medical board to adopt all rules and regulations necessary for the staff, subject to the approval of the board of officers. The medical board divided the staff into four divisions, consulting, active, visiting and courtesy, and authorized members of the courtesy staff to attend patients in the private rooms only. The rules and regulations of the medical board were adopted in accordance with authority conferred by the board of officers, were approved by the board of officers and have not been altered or repealed by the members of the corporation.

The plaintiff also contended that the adoption of the rules and regulations of the medical board constituted a combination or conspiracy in restraint of trade in violation of the Sherman antitrust act. There is no merit in that contention, said the Court of Appeals. The common law doctrines relating to contracts and combinations in restraint of trade or commerce were well understood long before the enactment of the Sherman act. In enacting this legislation to protect the public more effectively from the growing evils of restraints on the competitive system, Congress accepted the common law concept of illegal restraints of trade or commerce. A monopoly within the prohibition of our Declaration of Rights is a privilege or power to command and control traffic in some commodity, or the operation of a trade or business to the exclusion of others, who otherwise would be at liberty to engage therein, necessarily implying the suppression of competition and ordinarily causing a restraint of that freedom to engage in trade or commerce which the citizen enjoys by common right. A monopoly is more than a mere privilege to carry on a trade or business or to deal in a specified commodity. It is an exclusive privilege which prevents others from engaging therein. A grant of privileges, even though monopolistic in character, does not constitute a monopoly in the constitutional sense when reasonably required for protection of some public interest, when given in return for some public service or when given in reference to some matter not of common right. The rules and regulations of the medical board of Sinai Hospital, concluded the court, do not restrain interstate trade or commerce. Their purpose was not to destroy competition or to restrain the free availability of hospital or medical services to the public. Since the board of officers of the hospital had the right to appoint the physicians on the medical staff, it did not unlawfully deprive the plaintiff of any privilege when it failed to reappoint him on the visiting staff. Accordingly the judgment in favor of the defendant hospital was affirmed.—*Levin v. Sinai Hospital of Baltimore City, Inc., 46 A. (2d) 298 (Md., 1946).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Board in Specialties were published in THE JOURNAL, Aug. 31, Page 1528.

BOARDS OF MEDICAL EXAMINERS

ARIZONA: * Phoenix, 1st week in October. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: * Little Rock, Nov. 7-8. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Eclectic.* Little Rock, Nov. 7. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CONNECTICUT: * *Examination.* Hartford, Nov. 12-13. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, Nov. 12-13. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: *Reciprocity.* Washington, Sept. 9. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: * *Examination.* Jacksonville, Nov. 26-27. Sec., Dr. Harold D. Van Schaick, 2736 S.W. 7th Ave., Miami 36.

GEORGIA: Atlanta, Oct. 8-10. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

ILLINOIS: Chicago, Oct. 15-17. Sec., Dept. of Registration & Education, Mr. Philip Harman, Springfield.

KENTUCKY: *Examination.* Louisville, Dec. 16-18. Sec., State Board of Health, Dr. P. E. Blackerby, 620 S. Third St., Louisville 2.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, Dec. 10-13. Sec., Dr. J. T. O'Mara, 1215 Cathedral St., Baltimore 1. *Homeopathic.* Baltimore, Dec. 10-11. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, Nov. 19-22. *Endorsement.* Boston, Sept. 12. Sec., Board of Registration of Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston 33.

MICHIGAN: * *Examination.* Lansing, Oct. 9-11. Sec., Board of Registration in Medicine, Dr. J. E. McIntyre, 100 W. Allegan St., Lansing 8.

MINNESOTA: * Minneapolis, Oct. 15-17. Sec., Dr. J. F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Reciprocity.* Jackson, Dec. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson 113.

MISSOURI: *Examination.* St. Louis, Oct. 28-30. Dir., Medical Licensure, State Board of Health, Mrs. Lucy Motley, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Sept. 30-Oct. 2. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEW HAMPSHIRE: Concord, Sept. 12-13. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, Oct. 15-16. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 7-8. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, New York & Syracuse, Oct. 7-10. Sec., Dr. Jacob L. Lochner, Education Bldg., Albany.

NORTH CAROLINA: *Endorsement.* Asheville, Sept. 30. Act. Sec., Mrs. L. McNeill, 226 Hillsboro St., Raleigh.

OHIO: *Examination.* Columbus, Dec. 3-5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * *Examination.* Portland, Jan. *Reciprocity.* Portland, Oct. 26. Exec. Sec., Miss L. M. Conlee, 608 Failing Blad., Portland 4.

PENNSYLVANIA: *Examination.* Harrisburg, Oct. Act. Sec., Bureau of Professional Licensing, Dept. of Public Instruction, Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

RHODE ISLAND: *Examination.* Providence, Oct. 3-4. Sec., Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, Nov. 11-12. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

TENNESSEE: * *Examination.* Memphis, Oct. 2-3. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis 3.

TEXAS: *Examination.* Oct. 31-Nov. 2. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.

WEST VIRGINIA: Charleston, Oct. 7-9. Commissioner, Public Health Council, Dr. J. E. Offner, State Capitol, Charleston 5.

WYOMING: *Examination.* Cheyenne, Oct. 7-8. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination.* Tucson, Sept. 10. Sec., Dr. R. L. Nugent, Science Hall, University of Arizona, Tucson.

COLORADO: *Examination.* Denver, Sept. 11-12. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: *Examination.* New Haven, Oct. 12. Exec. Asst., State Board of Healing Arts, Mr. W. G. Reynolds, 250 Church St., New Haven.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 21-22. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, Nov. 2. Sec., Dr. J. F. Conn, John B. Stetson Univ., Deland.

IOWA: *Examination.* Des Moines, Oct. 8. Corresponding Sec., Division of Licensure & Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines 19.

MICHIGAN: *Examination.* Ann Arbor, Oct. 11-12. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: *Examination.* Minneapolis, Oct. 1-2. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis 14.

NEBRASKA: *Examination.* Omaha, Oct. 1-2. Dir., Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln 9.

NEW MEXICO: *Examination.* Nov. 3. Sec., Miss Marion M. Rhea, State Capitol, Santa Fe.

OREGON: *Examination.* Portland, Nov. 2. Sec., Mr. C. D. Byrne, Univ. of Oregon, Eugene.

SOUTH DAKOTA: Sioux Falls, Dec. 6-7. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: *Examination.* Madison, Sept. 21. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave.; Milwaukee 3.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1936 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Georgia Medical Association Journal, Atlanta

35:155-188 (June) 1946

Surgical Treatment of Achalasia of Esophagus. L. Grove and E. C. McMillan Jr.—p. 155.
Postinfluenzal Virus Pain Complexes. G. G. Allison.—p. 159.
*Subtotal Resection of Pancreas of 8 Year Old Child for Hyperinsulinism. E. Callaway.—p. 164.

Subtotal Resection of Pancreas for Hyperinsulinism in Child.—Callaway presents the case of a boy, aged 8, in whom an apparently hopeless hyperinsulinism was cured by a subtotal resection of the pancreas. The excised portion of the pancreas showed severe hyperplasia of the islands of Langerhans. The patient's urine was frequently checked and no sugar was found. A dextrose tolerance test was run three months after the operation and was normal. Tests run one and three years after were also normal. This case is of especial interest because of the age of the patient. It is probable that many cases of hyperinsulinism in children are improperly diagnosed as brain tumors, epilepsy or other diseases and are allowed to go to a fatal termination when a correct diagnosis could easily have been made by blood sugar studies and a cure obtained by proper dietetic management or by surgery. For hypoglycemia to be amenable to surgical treatment it must be caused by hyperinsulinism. Therefore every cause of hypoglycemia other than pancreatic disease should be considered and eliminated. The final diagnosis of hyperinsulinism can be made only by blood sugar studies. These studies should be carried through a six hour period if necessary. Dietetic treatment should always be given a trial before surgery is considered.

Journal of Experimental Medicine, New York

83:441-528 (June) 1946

*Period of Infectivity of Patients with Homologous Serum Jaundice and Routes of Infection in This Disease. W. P. Havens Jr.—p. 441.
Influence of Dietary Factors and Sex on Toxicity of Carbon Tetrachloride in Rats. P. György, J. Seifter, R. M. Tomarelli and H. Goldblatt.—p. 449.
Hemoglobin and Plasma Protein Production: Various Proteins, Concentrates and Digests Influence Blood Protein Production in Anemia and Hypoproteinemia. Frieda S. Robscheit-Robbins, L. L. Miller and G. H. Whipple.—p. 463.
Immunochemical Studies on Blood Groups: II. Properties of Blood Group A Substance from Pools of Hog Stomach and of Specific Precipitates Composed of A Substance and Homologous Human Antibody. E. A. Kabat, A. Bendich and Ada E. Bezer.—p. 477.
Id.: III. Properties of Purified Blood Group A Substances from Individual Hog Stomach Linings. A. Bendich, E. A. Kabat and Ada E. Bezer.—p. 485.
Preparation of Sections of Guinea Pig Liver for Electron Microscopy. A. Claude and E. F. Fullam.—p. 499.
Sulfonamide Chemotherapy of Combined Infection with Influenza Virus and Bacteria. C. G. Harford, Mary Ruth Smith and W. B. Wood Jr.—p. 505.

Period of Infectivity of Homologous Serum Jaundice.—Pooled specimens of serum obtained from 3 human volunteers three-fourths through their respective fifty-six, sixty-six and seventy day incubation periods of homologous serum jaundice produced the disease in 1 of 4 human volunteers following parenteral inoculation. Serum specimens obtained from the same 3 patients during the acute, preicteric phase of their homologous serum jaundice produced the disease in 3 of 4 human volunteers following parenteral inoculation. The same serums that proved to be infectious by parenteral inoculation failed to produce disease when ingested by 10 other human volunteers. Pooled specimens of serum obtained in the convalescent phase (twenty-eight to thirty-two days after onset) of these 3 patients failed to produce infection when inoculated parenterally into 5 human volunteers. Pooled specimens of feces of 3 patients obtained in the acute phase of homologous serum jaundice, when virus was proved to be in the serum, were not demonstrably infectious when fed to 6 volunteers. These findings are slightly different from those encountered in a similar study with infectious material from cases of infectious hepatitis.

Journal-Lancet, Minneapolis

66:131-176 (May) 1946

Chester Arthur Stewart—Physician, Teacher, Clinical Investigator, Organizer and Friend of Man: Personal Appreciation. J. A. Myers.—p. 132.
Challenge of Postwar Pediatrics. A. A. Weech.—p. 138.
Celiac Syndrome. R. B. Tudor and E. S. Platou.—p. 142.
Successful Treatment of Subacute Bacterial Endocarditis of Children with Penicillin. G. B. Logan and H. M. Keith.—p. 145.
Use of General Anesthesia in Treatment of Extensive Caries in Problem Children. R. T. Knight, J. T. Cohens and M. M. Litow.—p. 148.
Mesenteric Cysts Causing Intestinal Obstruction in Infancy: Report of 2 Cases. L. G. Pray.—p. 152.
Mesenteric Cyst: Report of Case. R. E. Dyson.—p. 155.
*Treatment of Chronic Influenzal Meningitis: Heparin as Adjuvant. E. S. Platou, R. W. Gibbs and F. H. Adams.—p. 157.
Direct Psychiatric Treatment of Child. H. S. Lippman.—p. 161.
Giant Cell Tumor of Bone in 4 Months Old Infant. W. E. Proffitt and O. S. Wyatt.—p. 163.
Two Cases of Hemolytic Anemia with Leukemoid Reaction of Myeloid Type. S. L. Arey.—p. 166.

Heparin in Influenzal Meningitis.—Platou and his associates show that heparin given intrathecally in the acute stages of infantile meningitis is worthy of trial to avert chronicity with its potentially serious or fatal sequelae. In chronic hemophilus influenza the problems of exudate in the small avenues of communication of the foramens and the subdural spaces, lack of adequate concentration of antibody in these areas and insufficiency of bacteriostasis may arise singly or in combination. Poor drainage, disparity in the character of fluid from the ventricle and the spine, abnormally high protein levels and persistently low sugar levels are suggestive adjuncts in the presence of clinical signs of rigidity, tremor, opisthotonos and positive cultures from the cerebrospinal fluid. Intrathecal serum may furnish the desired concentration but may also enhance the problem because of local antibody antigen reaction. Heparin may help liquefy exudate, and air injected later may open the delicate pathways so that curative mediums may reach their goal. Recent studies suggest that streptomycin may complement or even supplant sulfonamides as a bacteriostatic agent against Hemophilus influenzae. The 3 cases reported meet the criteria of chronic influenzal meningitis. Intrathecal and intraventricular therapy was carried out with antibody. Heparin, air, and complement injection, as well as specific therapy as suggested by Alexander, were used. The treatment was successful.

Minnesota Medicine, St. Paul

29:529-640 (June) 1946

*Treatment of Pneumococcic and Staphylococcic Meningitis with Penicillin and Sulfonamides: Report of 20 Cases. W. H. Hall, J. Alden, G. M. Burt and W. W. Spink.—p. 553.
Compound, Comminuted Fractures of Skull in Battle Casualties. G. S. Baker and H. Chenault.—p. 560.
*Vertigo in Hypothyroidism. A. G. Athens.—p. 562.
Evaluation and Management of Recurrent Headaches. J. A. Aita.—p. 568.
Blood Dyscrasia With and Without Associated "Atypical Lichen Planus": Report of 4 Cases. D. R. Gillespie and P. W. Brown.—p. 575.
Calyceal Diverticulum. E. R. Sterner, H. O. Peterson and K. Ikeda.—p. 578.
Effect of Antiluetic Therapy on Bundle Branch Block. D. E. Nolan and G. W. Pedigo.—p. 582.

Penicillin and Sulfonamides in Pneumococcic and Staphylococcic Meningitis.—Of 17 patients with pneumococcic meningitis whom Hall and his associates treated with penicillin, 13 recovered. Sixteen of the 17 patients received sulfadiazine or sulfamerazine in addition to the penicillin. Of 3 infants with staphylococcic meningitis who were treated with

a combination of penicillin and sulfonamides, 2 recovered. The authors recommend that in the treatment of suppurative meningitis due to pneumococci or staphylococci penicillin should be administered intravenously or intramuscularly and intrathecally. In addition, sulfadiazine or sulfamerazine should be given orally or parenterally but not intrathecally. The importance of early diagnosis, supportive treatment and eradication of suppurative foci is stressed.

Vertigo in Hypothyroidism.—Athens reviews observations on 30 patients who had recurring attacks of vertigo, fatigue, low basal metabolism and low blood pressure. Desiccated thyroid generally gave relief from symptoms in 25 patients who were treated. There is a similarity between this symptom complex and Ménière's syndrome. The author suggests the possibility of attacks of vertigo being precipitated by the accumulation of waste metabolic products in the endolymph and advises that routine basal metabolic studies and blood cholesterol determinations should be made in patients with Ménière's symptom complex.

New England Journal of Medicine, Boston

234:655-682 (May 16) 1946

Health Bills Pending in Congress: Part One. F. Goldmann.—p. 655.
Osseous Syphilis: Report of Case. M. Exley and A. W. Newton.—p. 661.
Generalized Dermatitis from Pediculosis Capitis. F. Ronchese.—p. 665.
Normal Growth and Development During Adolescence. H. C. Stuart. —p. 666.
Hepatoma, with Metastases to Lungs, Pancreas, Kidneys and Mediastinal and Retroperitoneal Lymph Nodes.—p. 673.
Metastases of Carcinoma of Cervix to Liver, Lung and Mesentery, with Obstruction of Vena Cava, Portal Vein, Right Branch of Hepatic Artery and Hepatic Duct.—p. 675.

234:683-712 (May 23) 1946

Hepatolenticular Degeneration: II. Nutritional Factors: Observations on Methionine and High Protein Diets. F. Hamburger.—p. 683.
Health Bills Pending in Congress: Part Two. F. Goldmann.—p. 687.
Cardiac Arrest After Spinal Anesthesia: Report of Case with Recovery. R. Lium.—p. 691.
Normal Growth and Development During Adolescence. H. C. Stuart. —p. 693.
Malignant Lymphoma (Giant Follicle Type) of Jejunum, Mesentery and Omentum.—p. 701.
Adenocarcinoma of Ascending Colon.—p. 703.

New Orleans Medical and Surgical Journal

98:523-580 (June) 1946

Fiberglas Packs in Pelvic Surgery. R. G. McMahon and F. U. Darby. —p. 523.
Function of Coroner's Office in Relation to Physician. C. G. Cole.—p. 524.
Vital Statistics: Their Relationship to Physician and to Board of Health. J. M. Whitney.—p. 527.
Two Interesting Cases of Rectovaginal Repair. W. E. Levy.—p. 529.
Phlegmonous Cecitis. G. McHardy and D. C. Browne.—p. 532.
Injuries to Shoulder. E. D. McBride.—p. 533.
*Impending Ischemic Gangrene: New Nonsurgical Therapeutic Suggestions; Preliminary Report. R. A. Katz.—p. 542.

Impending Ischemic Gangrene.—Katz administered diethyl oxide to 100 patients with impending ischemic gangrene. The average age of the diabetic patients was 65 years, of patients with Buerger's disease 45 years and of those with arteriosclerosis 61. The first series of 34 patients received intramuscular injections of a solution compounded of 50 per cent diethyl oxide, 50 per cent peanut oil and 10 per cent ethyl aminobenzoate with the addition of 100,000 units of penicillin. The maximum dose was 20 cc., equivalent to 10 cc. of diethyl oxide. Six patients developed ulcers, and consequently this method of administration was discontinued. A second series of 26 patients received intravenous injections of a solution containing 10 cc. of diethyl oxide in 90 cc. of saline solution. In a third series of 40 patients treated with diethyl oxide by the intravenous route sixth molar lactate solution was used as a dilution medium for the diabetic patients with actual necrotizing gangrene, isotonic solution of sodium chloride for uncomplicated cases and 5 per cent dextrose in distilled water for arteriosclerotic patients with hypertension. One infusion daily of 2.5 per cent diethyl oxide in a dilution medium of 1,000 cc. has proved the most acceptable routine; twelve consecutive infusions were followed with rest for two days, after which twelve more infusions were given. In all three series of patients the ischemia, edema and pain had been greatly relieved for various periods of time up to one year. There was a definite increase in the temperature of the skin. The improved circulation was manifested by a more normal color range. Patients with intermittent claudication have also responded well. No untoward toxic effects from diethyl oxide were observed when administered intravenously. The transitory rise in blood pressure caused by diethyl oxide may be counteracted by the simultaneous administration of 100 to 200 mg. of nicotinic acid.

Oklahoma State Medical Assn. Jour., Oklahoma City

39:197-244 (May) 1946

Surgical Treatment of Bronchiectasis. J. M. Camprell.—p. 197.
Psychosomatic Problems in Army General Hospital. M. E. Johnson. —p. 201.
Medical Aspect of Peptic Ulcer. S. G. Mollica and W. G. Hartnett. —p. 208.

39:245-288 (June) 1946

Compulsory Health Insurance. L. C. Kuyrkendall.—p. 245.
Injuries to Hand, with Particular Reference to Indications for Primary and Secondary Nerve and Tendon Repair. M. L. Mason.—p. 246.
Present Status of Immunization Procedures. J. F. Hackler.—p. 251.
Small Town Practice. C. Bailey.—p. 254.

Public Health Reports, Washington, D. C.

61:801-846 (June 7) 1946

*Experience with BCG Vaccine in Control of Tuberculosis Among North American Indians. J. D. Aronson and C. E. Palmer.—p. 802.

BCG Vaccination Among American Indians.—Aronson and Palmer studied the effect of BCG vaccination on the incidence of tuberculosis among American Indians. Three thousand and seven persons between the ages of 1 and 20 years were selected from a larger group on the basis of a negative tuberculin reaction. BCG vaccine was administered intracutaneously to 1,550, with 1,457 serving as controls. These persons were followed for six years with annual tuberculin tests and x-ray examinations of the chest. Tests of the vaccinated and control groups as to age, amount of exposure to tuberculosis and completeness of follow-up suggest that the two groups are comparable in these respects. Sixty deaths from all causes occurred among the 1,457 persons in the control group compared with 34 among 1,550 vaccinated. In terms of death per thousand person years, the death rates were 7.2 and 3.8 respectively. There were 28 deaths from tuberculosis among the controls as compared with only 4 such deaths among the BCG group. Including those that died from tuberculosis, 48 persons were classified as having extrapulmonary tuberculosis or advanced lesions of the lungs among the controls, while only 9 were found among the vaccinated. There were 20 persons showing x-ray evidence of minimal lesions among the controls and 8 among the vaccinated. The corresponding figures for persons presenting enlarged hilar glands were 99 and 19 respectively and for pleural effusion 18 and 4 respectively. The comparison for total incidence, cases of all types and deaths, is that of 185 among the controls and 40 in the vaccinated. In terms of 1,000 person years of life the rates were 24.3 and 4.7 respectively. There were indications that the protection may be greater in the later than in the earlier years after vaccination. The evidence is suggestive that BCG vaccine may be more effective in the older than the younger children. Some lots of vaccine appeared to afford much less protection than other lots.

Surgery, St. Louis

19:757-886 (June) 1946

Peripheral Nerve Injuries: I. Results of "Early" Nerve Suture: Preliminary Report. B. Woodhall and W. R. Lyons.—p. 757.
*Decompression of Orbit. J. S. Guyton.—p. 790.
Method of Encephalography. E. G. Robertson.—p. 810.
*Study of Azotemia Observed After Severe Burns. J. Walker Jr.—p. 825.
Surgery of Colon as Seen in Overseas General Hospital. G. W. Horsley and R. A. Michaux.—p. 845.

Decompression of Orbit.—Guyton advises decompression of the orbit for the reduction of severe exophthalmos in which there is an increase in the weight of all orbital structures (muscles, fat, lacrimal glands) due to increased water storage,

with progressive hypertrophy and degeneration of the extraocular muscles, scattered lymphocytic infiltration and progressive fibrosis of the orbital structures. Incomplete closure of the lids and impaired nutrition may cause corneal ulceration. The increase in retrobulbar pressure may be great enough to cause papilledema and secondary optic atrophy. Loss of vision has been reported in scores of cases. The orbit can be decompressed into the anterior cranial fossa, the frontal and ethmoidal sinuses or the temporal fossa. He describes an improved technic utilizing the temporal fossa. This operation is the least dangerous of the various decompressions, being extracranial, performed in an aseptic field and not endangering any important structures. It leaves no visible scar or other cosmetic defect and gives a completely adequate decompression. Its use is recommended for patients desiring cosmetic improvement of exophthalmic disfigurement as well as for those with threatened impairment of visual function.

Azotemia After Severe Burns.—Walker investigated the components of the plasma nonprotein nitrogen to find an explanation for the lack of correlation. He found that the plasma nonprotein nitrogen rose to above 100 mg. per hundred cubic centimeters in 8 of about 100 patients studied. All these patients died, and 7 of the 8 died with symptoms of toxemia. Most of the other patients who died either showed pathologic lesions unrelated to the burn which explained the death or had nonprotein nitrogen levels higher than 80 mg. per hundred cubic centimeters. The rise in plasma nonprotein nitrogen was due chiefly to an increase in an as yet undetermined fraction. There was a constant but less evident increase in the excretion of urinary nonprotein nitrogen, with 30 to 50 per cent of the increase due to the undetermined fraction. There was a considerable depression of the urea clearance during the phase of toxemia, which persisted to some extent in cases of severe burns until the injured areas had epithelized. Since the occasional increase in blood urea nitrogen was not proportional to the rise in undetermined nitrogen, and since the urinary output was generally somewhat increased, it seems unlikely that kidney damage is the usual cause of death in burn toxemia.

Tennessee State Medical Assn. Journal, Nashville

39:157-192 (May) 1946

Showdown on Political Medicine. E. F. Stegen.—p. 157.
Endometriosis and Pregnancy. J. R. Bromwell Branch.—p. 163.
Hospital Survey and Construction Bill. G. Bugbee.—p. 166.

39:193-230 (June) 1946

Recent Advances in Chemotherapy of Malaria. H. Packer.—p. 193.
Health Education Today and Tomorrow. W. W. Bauer.—p. 200.
Use of Intravenous Alcohol for Postoperative Analgesia and Sedation. E. T. Reimann.—p. 207.
Obstetrics and Pediatric Meddling. H. Kennedy.—p. 210.

Wisconsin Medical Journal, Madison

45:569-650 (June) 1946

*Histoplasmosis—Reticuloendothelial Cytomycosis: Report of Case from Wisconsin. J. F. Kuzma and M. Schuster.—p. 591.
Treatment of Some Anxiety States. W. S. Muncie.—p. 595.
Epidemiologic Study of Primary Syphilis Case. R. M. Lind.—p. 598.

Histoplasmosis—Reticuloendothelial Cytomycosis.—A man aged 65, a dog breeder, died after three days of hospitalization. Necropsy and microscopic studies revealed a generalized involvement of most of the organs. The usual change was an increased number of large monocytic cells which contained numerous minute inclusions, each of which was surrounded by a refractile capsule. These cells were identified in the liver, lymph nodes and spleen as part of the reticuloendothelial system. The only area of necrosis and caseation was a nodule identified grossly in the lung. This had central amorphous caseation necrosis surrounded by a thin layer of fibrillar collagenous tissue. Numerous histoplasma bodies were found in the area of necrosis. This is the first instance of histoplasmosis reported in the state of Wisconsin. Kuzma and Schuster stress the diagnostic importance of microscopic examination of enlarged lymph nodes. There is no effective treatment.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

21:1-60 (March) 1946

*Early Failure of Breast Feeding: Clinical Study of Its Causes and Their Prevention. H. Waller.—p. 1.
Observations on Penicillin: Its Dosage and Administrations in Infancy. M. Bodian.—p. 13.
Aerosol Penicillin in Oxygen Tent. F. A. Knott and N. Southwell.—p. 16.
Penicillin in Treatment of Neonatal Sepsis. F. M. B. Allen, J. E. Morison and W. R. Hutherford.—p. 19.
*Sulfonamides in Treatment of Infections in Infancy. M. Henderson and E. C. R. Couper.—p. 23.
Rickets in Singapore. C. D. Williams.—p. 37.

Early Failure of Breast Feeding.—The main principle put forward by Waller is that an easy start of breast feeding depends on milk pressure within the breasts not rising to an excessive height. If it does so rise, and if it is not speedily lowered, a rapid decline in production follows by reason of alveolar distention and compression of the secreting cells. This is claimed to be the chief cause of failure of milk production soon after women get up from childbed. The frequency of high milk pressure at the outset of the first lactation is attributed to certain anatomic defects of the nipples and the terminal ducts, a claim for which there is clinical evidence but which needs confirmation by more exact means. A controlled experiment is described in which half the women used were taught the daily removal of colostrum during the last three months of pregnancy and their breast feeding compared with that of the other half who were not so taught, the two groups receiving identical management during the lying-in period. Excessive milk pressure occurred in 25 per cent of the "pupils" and in 56 per cent of the controls, while at the end of six months 83 per cent of the former were still successfully breast feeding as against 42 per cent of the latter. It is suggested that the preliminary removal of colostrum facilitated the initial outflow of milk by stretching and enlarging the terminal part of the duct system.

Sulfonamides in Infections in Infancy.—Henderson and Couper studied 415 infants under the age of 10 months who had some infection and most of whom were treated with a sulfonamide. These drugs are well tolerated by infants. Sulfapyridine tends to cause cyanosis and vomiting. Mild cyanosis but no vomiting may also occur with sulfamezathine. Edema occasionally occurs with sulfaguanidine and succinylsulfathiazole, and the latter drug may also cause an increased tendency to hemorrhage. In neonatal gastroenteritis the death rate may be reduced by the use of sulfaguanidine or succinylsulfathiazole, but the treatment must be started early. Sulfaguanidine and succinylsulfathiazole probably have little effect in gastroenteritis of older infants. In pneumonia and bronchopneumonia sulfamezathine is the drug of choice. Sulfamezathine, sulfathiazole, sulfadiazine and sulfapyridine do not produce striking results in upper respiratory infection and bronchitis. They exert little effect in preventing the development of otitis media. When otitis media occurs alone sulfathiazole and sulfadiazine constitute a therapeutic advance but not as great an advance as could be wished. Once mastoiditis has supervened, sulfonamides will not influence the disease. The series of pyelitis cases is too small to justify conclusions, but an equally good result was obtained with sodium citrate mixture alone as with the sulfonamides used. Cellulitis unaccompanied by pus formation can be successfully treated with sulfadiazine and sulfathiazole. The local treatment of pemphigus with sulfonamide cream is very satisfactory.

British Journal of Industrial Medicine, London

3:55-110 (April) 1946

Chronic Mercury Poisoning. M. Buckell, D. Hunter, R. Milton and K. M. A. Perry.—p. 55.
Bronchiolitis Resulting from Handling of Bagasse. D. Hunter and K. M. A. Perry.—p. 64.
Etiology, Prevention and Treatment of Chronic Bronchitis. N. Southwell.—p. 75.
Incidence of Siderosis in Iron Turners and Grinders. M. Buckell, J. Garrad, M. H. Jupe and others.—p. 78.
Occupational Dermatitis. A. T. Jones.—p. 83.

Lancet, London

1:841-876 (June 8) 1946

Care of the Chronic Aged Sick. Marjory W. Warren.—p. 841.
*Segmental Resection of Lung for Bronchiectasis. R. Pilcher.—p. 843.
Crohn's Disease: Report of 2 Cases. A. H. Bennett.—p. 846.
Penicillin in Chronic Osteomyelitis. D. M. Keir.—p. 848.
*Chronic Diarrhea Treated with Folic Acid. L. B. Carruthers.—p. 849.
Edema in Recovered Prisoners of War. T. Stapleton.—p. 850.

Segmental Resection of Lung for Bronchiectasis.—Pilcher says that when the surgical treatment of bronchiectasis in children was started at the University of London Hospital it was decided that the dissection technic should be used whenever possible, and for this the lobe was regarded as the smallest suitable unit of lung tissue. The lingula, which is often selectively involved, was regarded as a lobe and was removed with conservation of the rest of the upper lobe. To remove the lingula it is necessary to dissect an intersegmental plane, as this segment has only a shallow fissure demarcating it from the rest of the upper lobe. Thus, lingula lobectomy is in fact a segmental resection. In view of the practicability of segmental resection of the lingula and of lobectomy of fused lobes there seemed no reason why segmental resection should not be applied to other parts of the lungs, the more so since improvements in bronchography have made it possible to determine the segmental distribution of disease. The author stresses that segmental resection of the lung widens the scope of surgery in extensive bronchiectasis and minimizes the sacrifice of healthy lung. The operation carries no greater risk than does lobectomy. In children palpation is a useful aid to recognition of diseased segments, and for this a free pleura is an advantage. The operation has been done in 10 cases.

Chronic Diarrhea Treated with Folic Acid.—Carruthers selected 4 severe cases of hypochromic anemia for treatment with folic acid. The dosage was 40 to 60 mg. daily, and all other therapy was suspended. In 1 of these patients the anemia was secondary to chronic malaria, in another to chronic glomerular nephritis and in the remaining 2 to chronic diarrhea. In no case did treatment with folic acid in the five to seven day period lead to noteworthy improvement in the anemia. However, in the 2 cases of chronic diarrhea an immediate improvement in the stools took place and this led the author to abandon folic acid in the treatment of anemia and to try its effects in 6 cases of chronic diarrhea. In these 6 cases of chronic diarrhea, folic acid therapy restored the stools to normal or approximately normal within two to five days. These results are significant but by no means conclusive.

Archives des Maladies de l'Appareil Digestif, Paris

34:293-368 (Oct.-Dec.) 1945

Usefulness of Intravenous Route for Administration of Morphine in Pharmacoroentgenography. G. Albot, E. Girard and Jaqueline Renaux.—p. 293.
*Effect of Ascorbic Acid on Experimental Peptic Ulcer Produced by Cinchophen (Atophan). J. Nasio.—p. 300.
*Homogenous Blood Transfusions in Treatment of Ulcers of Stomach and Duodenum. S. Ryss and X. Stroikowa.—p. 307.

Ascorbic Acid in Peptic Ulcer.—Nasio administered to 13 dogs simultaneously 0.25 Gm. of cinchophen per kilogram of weight orally and 500 mg. of ascorbic acid intramuscularly per day for thirteen to twenty-two days. Typical peptic ulcers were observed in only 5 of the 13 dogs; in the remaining 8 dogs the ascorbic acid prevented the occurrence of the cinchophen ulcer, but some of the animals presented cicatrized ulcerative lesions. None of the animals developed any ulcerative complication, particularly hemorrhage. Their weight decreased less than that of the control animals. These results corroborate the clinical experiences of other authors concerning the therapeutic efficiency of the ascorbic acid in gastroduodenal ulcers.

Homogenous Blood Transfusions in Gastroduodenal Ulcers.—Ryss and Stroikowa report the results of 142 homogenous blood transfusions given to 40 patients, 25 with ulcers of the stomach and 15 with duodenal ulcers. Forty-seven transfusions were given to 12 patients with hemorrhages, while ninety-five transfusions were given to 28 patients with chronic recurrent ulcers without hemorrhage. Three transfusions of 200 to 250 cc. of blood every six to ten days are required for the chronic cases without hemorrhage, while at least four to five transfusions are suggested for hemorrhagic cases. Dyspeptic disorders were present in 25 cases (65 per cent); these subsided in 20 cases (80 per cent) and improved in 5 (20 per cent). Pain was present in 35 cases (87.5 per cent); it subsided in 25 cases (71.5 per cent) and was alleviated in 10 cases (28.5 per cent). The niche disappeared in 16 of 27 cases, i. e. in 59 per cent; it was reduced in 6 cases (22 per cent) and remained unchanged in 5 (19 per cent). A local allergic reaction manifested by urticaria occurred in 4 patients with hemorrhage and in 3 patients without hemorrhage. This reaction always proved to be a good prognostic sign. Homogenous blood transfusion is to be considered as a shock treatment, causing a local hyperergic inflammation followed by cicatrization and producing allergic reactions resulting from colloidoclasia and proteolysis, which stimulate the immunobiologic processes of the organism.

Schweizerische medizinische Wochenschrift, Basel

76:309-332 (April 13) 1946

Sensitization by Drugs. G. Miescher.—p. 309.
*Significance of Synthetic Antihistamines for Dermatology. W. Brack.—p. 316.
Treatment of Morgagni-Adams Attacks. K. Polzer.—p. 321.
*Lead Poisoning and Porphyria. R. Hug.—p. 322.
Idiopathic Hypoprothrombinemia and Hemorrhagic Diathesis. F. Hauser.—p. 324.
Resorption of Corpuscular Blood Elements in Peritoneal Cavity, Subcutaneous Tissues and Rectum. H. Winzeler.—p. 325.

Synthetic Antihistamines in Dermatology. — Brack studied the effect of two antihistamine bodies: (1) dimethylamino-ethyl-benzylaniline, which is also known as antergan, and (2) 2-(N-phenyl-N-benzyl-aminomethyl)-imidazolin, which is designated as antistin. Both substances, in addition to their inhibiting effect on itching produced by histamine, have a slight local anesthetic effect, but they have no effect on the itching produced by epinephrine. Antergan has numerous undesirable secondary effects. Antistin has been used for eighteen months in over 100 cases. In proper doses it will reduce or counteract the itching in urticaria, eczema, neurodermatitis, prurigo, lichen ruber planus, psoriasis and nervous pruritus without skin changes and in scabies. Doses which cause temporary mild dizziness may have to be employed, if complete suppression of the itching is desired. In urticaria, not only the itching is suppressed, but the skin changes are either counteracted or prevented. A direct influence on the skin changes could not be proved in eczema, neurodermatitis, prurigo and the other skin defects. The indirect therapeutic effect is considerable, since, by suppressing the itching, antistin facilitates the effectiveness of other treatments. Antistin seems to suppress the itching regardless of whether the itching tendency is elicited by sympathicotonic or parasympathicotonic factors, which seems to indicate that the itching is always produced by H substances. As is indicated by local skin tests, antistin probably exerts its effect chiefly by its peripheral influence on the vasomotor action that elicits the itching, in that the liberated histamine or the corresponding H substance is prevented from exerting its effect. Central effects are probably responsible for the mild dizziness that occasionally develops, but with this exception no other undesirable secondary effects were observed.

Lead Poisoning and Porphyria.—A woman aged 24, while working in ceramics, handled paints that contained lead and was in the habit of licking the paint brush. She developed abdominal symptoms that suggested lead poisoning, but a lead line was not evident. The patient died two weeks after hospitalization. Necropsy studies, particularly the high lead content of the bone marrow, seemed to corroborate the diagnosis of lead intoxication. Hug states that lead poisoning cannot be regarded as a toxic form of porphyria. The case under consideration presented all the classic symptoms of acute porphyria. The concurrence of lead poisoning and porphyria is rare. Two possibilities are present: either the two conditions happened to concur or lead poisoning has elicited an attack of acute porphyria. It is also possible that the attack of acute porphyria developed independently of the lead intoxication.

Book Notices

Gastro-Enterology (in Three Volumes). By Henry L. Bockus, M.D., Professor of Gastro-Enterology, University of Pennsylvania, Philadelphia, and Colleagues at University of Pennsylvania Graduate School of Medicine. Volume III: Diagnosis and Treatment of Disorders of the Liver, Gallbladder, Biliary Tract and Pancreas. Intestinal Parasites and Secondary Gastro-Intestinal Disorders. General Index. Cloth. Price, $35 per set of 3 volumes and separate desk index. Pp. 1,091, with 115 illustrations; pp. 101. Philadelphia & London: W. B. Saunders Company, 1946.

Fourteen members of the faculty of the Graduate School of Medicine of the University of Pennsylvania have contributed to this volume on a system of gastroenterology. The present volume is concerned with the liver, the gallbladder, the pancreas, gastrointestinal parasites and a number of miscellaneous conditions affecting the gastrointestinal tract. In its field this is the most comprehensive work available and obviously a must book for the shelves of every physician at all interested in gastroenterology as a specialty. The general practitioner will find it the most complete and up to date reference work on the subject.

Preventive Medicine and Public Health. By Wilson G. Smillie, A.B., M.D., D.P.H., Professor of Public Health and Preventive Medicine, Cornell University Medical College, New York. Cloth. Price, $6. Pp. 607, with 42 illustrations New York: Macmillan Company, 1946.

This textbook has been designed particularly to introduce to medical students the point of view of preventive medicine. It introduces the problems of public health from the community point of view, including the social aspects of medical care. The author recognizes that many of the decisions in this field are still debatable. After an introduction to the subject with some discussion of statistics, the subject is presented with reference to environmental sanitation, control of communicable diseases, child hygiene, the protection and promotion of the health of adults and problems of public health administration. The book is exceedingly well written and worthy of wide adoption as a textbook in the field it covers. Unlike most other textbooks, the emphasis is less on sanitary engineering than on public health from the medical point of view.

Applied Physiology. By Samson Wright, M.D., F.R.C.P., John Astor Professor of Physiology, University of London. Oxford Medical Publications. Eighth edition. Cloth. Price, $9. Pp. 944, with 515 illustrations. New York, London & Toronto: Oxford University Press, 1945.

This has had sixteen printings of eight editions since 1926. Nearly five years has elapsed since the appearance of the last previous edition. In his preface the author calls attention particularly to the advancement of psychosomatic medicine, the use of radioactive isotopes and the extensive investigations that have been made on human beings. He mentions as noteworthy achievements the production of pure vitamin deficiencies, the study of cardiac output, changes in the blood pressure, measurement of blood flow and functional tests of various organs. Some two hundred new illustrations have been added to the present edition, in which practically every section has been rewritten and revised.

Dr. Morton: Pioneer in the Use of Ether. By Rachel Baker. Cloth. Price, $2.50. Pp. 224, with illustrations by Lawrence Dresser. New York: Julian Messner, Inc., 1946.

Here in novelized form is the story of the use of ether in anesthesia. Unlike a novel, the book is supplemented with a bibliography and an index. There are two casual references to Dr. Crawford Long. The book reflects the continual battle as to who really discovered the use of ether for anesthesia, and Jackson is pictured as an implacable enemy of Morton. The story presentation may serve to arouse interest in more erudite works on one of the great problems of medical history.

Personal Hygiene Applied. By Jesse Feiring Williams, M.D., Sc.D. Eighth edition. Cloth. Price, $2.50. Pp. 564, with 156 illustrations. Philadelphia & London: W. B. Saunders Company, 1946.

Eight editions of this book testify to its wide use and to its continued improvement. The present edition takes into account the lessons of war experience and the results of research carried on during the last five years. The author's philosophy of physical fitness is in accord with modern medical points of view.

Oral Medicine: Diagnosis, Treatment. By Lester W. Burket, D.D.S., M.D., Professor of Oral Medicine. The Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, Philadelphia. With a section on Oral Aspects of Aviation Medicine by Major Alvin Goldhush, D.D.S., M.S., D. C., A. U. S. Fabrikoid. Price, $12. Pp. 674, with 350 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1946.

This book is an excellent departure from the usual medico-dental publication. It tends to close a narrowing gap between medicine and dentistry. The patient's history form suggested contains much pertinent information but could be simplified considerably. The chapter on laboratory procedures is superior. Even though the dentist is not expected to perform some of the tests described, he is given an excellent idea of laboratory procedures that may be necessary. The use of penicillin in the treatment of the stomatitides has been omitted. Penicillin has proved value in oral infections and should be included in this section. The chapter on dermatoses might well include some discussion on drug eruptions of the mouth. The various oral manifestations seen in systemic diseases are thoroughly discussed. The section on oral aspects of the avitaminoses fills a gap of long standing and adds immeasurably to the diagnostic armamentarium of every physician and dentist. Pernicious anemia and sprue might more appropriately be discussed under "Diseases of the Blood and Blood Forming Organs" instead of under "Diseases of Metabolism." The color atlas is a valuable diagnostic asset. Its value, however, would be greatly increased if the plates were twice the size shown. It is difficult to exaggerate the importance of the regional diagnostic index. This book is comprehensive, well organized, extremely practical, a medical education for the dentist and a veritable source of information for the physician. It is highly recommended.

Modern Trends in Child Psychiatry. Editors: Nolan D. C. Lewis, M.D., and Bernard L. Pacella, M.D., Editorial Assistant: Gertrud M. Kurth, Ph.D. Cloth. Price, $6. Pp. 341, with 10 illustrations. New York: International Universities Press, 1945.

The seventeen chapters of this book were presented in 1943 and 1944 as a series of lectures at the New York State Psychiatric Institute and Hospital. Lecturers who are authorities in the field of child psychiatry were selected without regard for their psychologic orientation. This ranges from the psychoanalytic to the psychobiologic and the "living" social relationship between child and parent. Anxiety states, psychoneurotic, psychosomatic and psychotic disturbances and organic brain conditions are discussed. The newer diagnostic tools of the electroencephalogram and projective technics available to the psychiatrist receive consideration. The last portion of the lectures deals with various approaches to therapy. Play activities, the use of art production, school therapy, child analysis, child-parent therapy, group therapy and psychiatric social case work are considered. Many of the newer approaches and experimental attempts which are being tried are mentioned. As is inevitable in a book of this character there is some inequality in the value of the articles, but practically all of the contributions are of high caliber both in content and in style of presentation. In the preface the editors say "The essential purpose of this volume is to make accessible the most recent thought, investigations and achievements in child psychiatry." The editors are to be congratulated on accomplishing their aim. Each article has a brief bibliography so that the interested reader will be able to read further in the field.

Kortikalin: K ucheniyu o vnutrenney sekretsii kory nadpochechnika. [By] N. B. Medvedeva. [Kortikalin: Study of Internal Secretion of Adrenal Cortex.] [With English abstract.] Akademiya Nauk Ukrainskoy SSR Institut Klinicheskoy Fiziologii. Paper. Price 15 rub. Pp. 195. Kiev: Izdatelstvo Akademii Nauk Ukrainskoy SSR, 1943.

The monograph on corticalin by N. B. Medvedeva consists of two parts. The first part is devoted to the chemical composition of the adrenal cortex and the existing cortical preparations, including a discussion of experimental acute adrenal insufficiency and of chronic adrenal insufficiency. The various functions of the adrenal cortex and its influence on metabolism, as well as the application of cortex preparations in experiment and in the clinic, are thoroughly discussed. The second part of the monograph deals with the original investigations of Professor Medvedeva, a co-worker of A. A. Bogomolets. The

school of Bogomolets has been interested for some time in the question of the participation of the adrenal cortex in the regulation of carbohydrate metabolism. Tissues of adrenalectomized animals lost to a great extent their ability to split and oxidize glucose. Sugar injected into the vein of such an animal was not assimilated but remained in the blood. The synthesis of phosphorus acid ethers of hexose and creatine was reduced to a great extent. Apparently deficiency of adrenals leads to a pronounced disturbance of assimilation of sugar and of the synthetic phase of carbohydrate metabolism. Medvedeva claims that she isolated a specific substance from the cortex of the adrenal by the method of extracting from crushed adrenal cortex with acidified water and precipitation with sodium stearate. After separation from the sodium stearate precipitate with ethyl ether, the active substance is dissolved in water. Intradermal or intravenous administration of this substance causes a sharp fall in the blood sugar of an animal. The substance was given the name "corticalin." Its hypoglycemizing effect differs from that of insulin in that no matter how deep, it is not accompanied by cramps and other phenomena of intoxication. It also differs from insulin in its solubility and precipitability. Corticalin appears to be a substance peculiar to the adrenal cortex. Attempts to obtain an analogous substance by the same method of extraction from liver, muscles, stomach, intestine, lung, lymphatic tissue, pituitary, pancreas and cancer gave negative results. The author therefore considers corticalin a specific active substance of the adrenal cortex absorbed or stored by the adrenal tissue. Corticalin as a true hormone has no species specificity and can be obtained from the adrenal cortex of the ox, swine and ram and is active for the dog, rabbit, rat and mouse. Its specific action is that of intensification of the synthetic phase of metabolism. Corticalin hypoglycemia does not depend on increased sugar splitting or increased sugar oxidation. Corticalin promotes glycogen synthesis. In the liver and skeletal muscles of a mouse the glycogen content is almost doubled under the influence of corticalin. When injected into an animal deprived of its adrenals the corticalin is capable of maintaining the glycogen synthesis even under the increased requirements of muscular work. Normally, muscular work results in loss of glycogen of the liver. The glycogen reserve of the liver spent in work is restored during rest. In the adrenalectomized animal, glycogen lost during the work is not restored during rest. However, if corticalin is injected the restoration takes place up to normal. The author therefore considers that corticalin, at least so far as formation of glycogen is concerned, participates in the synthesis of the restoration phase of metabolism and influences the analogous synthetic processes and for that reason may be properly called the "hormone of rest."

This interesting monograph is in Russian with a preface by Bogomolets translated into English and with the author's summary in Russian and in English. The literature on the subject is thoroughly reviewed. The monograph seems to be an important contribution to the physiology of the cortex of the adrenal glands.

The University at the Crossroads: Addresses and Essays. By Henry E. Sigerist, M.D., D.Litt., LL.D., William H. Welch, Professor of the History of Medicine, The Johns Hopkins University, Baltimore, Maryland. Cloth. Price, $2.75. Pp. 162. New York: Henry Schumann, 1946.

In this volume the author has collected a series of addresses and essays written during the war years. He believes that the failure of our generation, as evidenced by the boom of the twenties, the depression of the thirties, the rise of fascism and the war is largely because "the universities failed miserably in their tasks. They did not produce the enlightened leaders that the country so urgently needed." He ascribes this failure to higher education being more concerned with the imparting of technical and specialized knowledge than with the correlation of such knowledge with all aspects of life in a complex world. In this respect he believes medical education to be especially at fault, since it equips the physician with superlative intellectual and technical tools to provide medical care but neglects such social problems of medicine as the distribution of physicians, the costs of medical care, prepayment medical insurance and compulsory health insurance.

There is no doubt that there is a neglect of these subjects in our medical schools. There should be reading assignments and seminar courses in the sociologic and economic aspects of medicine, with discussions of current legislation, medical society insurance plans and forms of medical practice, here and abroad, current and proposed.

However, the basic research in these aspects of medicine does not lie in laboratories or universities but in field studies, as is the case generally in sociologic problems. The research work is to be found in the seventy-odd medical care plans in twenty-eight of our states rather than behind cloistered university walls.

Dr. Sigerist deplores the short-sighted government policies that prohibited the training of scientists during the war, which neither England nor Russia found to be necessary although their manpower problems were certainly no less acute than our own.

It is difficult to agree with the author's contention that "medical education . . . still follows the pattern that was established in this country fifty years ago." Since that time we have seen the Flexner report and its revolutionary consequences, the substitution of the clinical clerkship for the lecture type of instruction, the elevation of the clinical student to a position of dignity as a collaborator in a clinical team rather than a schoolboy doing homework, the rise of the great university teaching hospitals and the development of "full time" clinical instruction, to mention a few major advances in medical education in the past few decades.

Hermaphroditos: The Human Intersex. By A. P. Cawadias, O.B.E., M.D., F.R.C.P. Second edition. Cloth. Price, 15s. Pp. 81, with 14 illustrations. New York: Grune & Stratton; London: William Heinemann, Ltd., 1946.

This strangely titled book is actually a biologic study of intersexuality. The author considers the subject a disturbance in which glandular and mental factors combine to produce intersexual conditions. There are the usual references to some of the well known cases of history besides a number of references to cases that the author himself has studied.

Unhappy Marriage and Divorce: A Study of Neurotic Choice of Marriage Partners. By Edmund Bergler, M.D. With an introduction by A. A. Brill, M.D. Cloth. Price, $2.50. Pp. 167. New York: International Universities Press, 1946.

From a psychoanalytic point of view the author discusses love, marriages, sexual problems and divorce in accurate nontechnical language. The work is explanatory and does not include useless directions for rapid but impossible intellectual solutions of conflicts arising from unconscious attitudes. The book is for the edification of physicians. The bibliography is poorly organized and there is no index.

Quantitative Organic Microanalysis Based on the Methods of Fritz Pregl. Edited by Julius Grant, M.Sc., Ph.D., F.R.I.C. Fourth English edition. Cloth. Price, $5. Pp. 238, with 94 illustrations. Philadelphia: Blakiston Company, 1946.

Organic microanalysis is an important tool in medical research and other biologic studies. As such this fourth English edition, based on the methods established by Pregl, should be welcomed by microchemical analysts. The book has been revised and edited with much more regard to developments by other than the German workers. A more orderly sequence in the presentation of apparatus, reagents, procedures, calculations, references and notes is a noteworthy improvement over the earlier editions. Although some new subjects are considered, other desirable methods recently developed are not mentioned. As an example, no reference is made of the ninhydrin method for the determination of α-amino nitrogen.

Shock Treatments and Other Somatic Procedures in Psychiatry. By Lothar B. Kalinowsky M.D., Research Associate in Psychiatry, College of Physicians and Surgeons, Columbia University, New York, and Paul H. Hoch, M.D., Assistant Clinical Psychiatrist, New York State Psychiatric Institute and Hospital, New York. Foreword by Nolan D. C. Lewis, M.D., Professor of Psychiatry, College of Physicians and Surgeons, Columbia University, New York. Cloth. Price, $4.50. Pp. 294. New York: Grune & Stratton, 1946.

This is a long needed book that considers in scientific detail the various physical technics in psychiatry. Insulin and convulsive shock, narcosis, fever, refrigeration and surgical therapies are presented adequately. The literature is discussed and thoroughly documented. There is an excellent bibliography and index. Psychiatrists will appreciate this excellent presentation of a wealth of important information.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

AIR TRAVEL FOR PREGNANT WOMEN

To the Editor:—**More and more women, especially army wives, are asking about the safety of travel by commercial airlines for a pregnant woman. They also ask about the danger of travel with a newborn baby. Recent newspaper reports of the death of a young infant on a plane trip appear to have been widely read. Patients ask whether it would be better to make an air trip from Illinois to California or New England before or after the baby is born. Air lines have varying rules to cover travel by pregnant women. One company prefers not to carry them if they are beyond seven months pregnant. Another company requires a "physician's certificate" but is vague as to what should be certified. Pressurized cabins are not always available although the planes may go to high altitudes to avoid storms. Up to now my advice has been that: 1. It is probably desirable to travel before the baby is born. 2. The trip should be made before the eighth month of pregnancy because of the possibility of labor during the trip and to avoid high altitudes at a time when the patient is inclined to dyspnea from increased intra-abdominal pressure. 3. Before boarding a plane the patient should make certain that oxygen is available to passengers and that the stewardess will notify her whenever the plane goes above 5,000 feet. To prevent injury to the fetus from deficient oxygen supply the patient should take oxygen continuously above this altitude and at any other time if she feels the need of it.**

Sherman S. Garrett, M.D., Champaign, Ill.

ANSWER.—The effect of anoxia due to exposure to altitude on the induction of labor has not been studied. If oxygen is taken at 5,000 feet or above in commercial aircraft, anoxia should not occur and the conditions at ground level should prevail. The emotional stress present in some persons unaccustomed to flying should be considered. Cardiopathy should also be considered and, if present, supplemental oxygen is probably advisable above 1,000 feet. There is no reason why a pregnant woman with a good cardiovascular system should not fly during the ninth month except for the chance of having the baby born during flight. With an adequate oxygen supply as much work can be done at an altitude of 30,000 feet as at ground level. Above 33,000 feet anoxia occurs even when undiluted oxygen is being breathed.

The danger of air travel by infants and children with a normal cardiorespiratory system is less than for adults, since it is known that infants tolerate anoxia better than adults. However, at altitudes above 15,000 feet oxygen should be supplied. Since the use of a mask is not practical, the design of devices for supplying oxygen to infants in airplanes is being studied. In the case of an emergency the infant could be placed in some container, which then should be kept well aerated with pure oxygen until the plane returns to 12,000 feet. If a suitable container is not available, a stream of oxygen could be directed toward the infant's nose. For this purpose a "lorgnette" or a device which may be held over the nose and mouth of the infant is used by some commercial airlines. The presence of cyanosis of the lips and fingernail beds would indicate an inadequate flow of oxygen.

INCIDENCE OF POSTOPERATIVE ABDOMINAL HERNIAS

To the Editor:—**Please discuss the relative frequency of postoperative (incisional) hernia following the McBurney incision as compared with other types of abdominal incisions for appendicitis.**

Lloyd J. Netto, M.D., West Palm Beach, Fla.

ANSWER.—A number of reports have appeared in the literature concerning the various types of abdominal wall defects following appendectomies. Thiessen reported 31 cases of right inguinal hernia in which previous appendectomies had been performed through right lower quadrant incisions. In 9 of these the hernia followed a low right rectus incision. In 19 it followed a McBurney incision. In 3 cases the type of incision was unrecorded. There were 2 cases of recurrent right indirect inguinal hernia following McBurney incisions. All but 4 of the 31 hernias were indirect. Tashiro, in discussing wound disruptions in a series of 55 cases, reported evisceration in 3 low left rectus incisions and in 1 low right rectus incision. Maes, Boyce and McFetridge reported a series of 44 eviscerations, of which 6 occurred in McBurney incisions. Fowler reported a 14 per cent incidence of postoperative hernias in a series of 182 cases of drained appendectomies. Heineck cited Griffith's series of 10 hernias occurring in patients operated on for appendicitis through McBurney incisions. This author believes that injury to the ileoinguinal nerve at time of operation is a contributing factor in postoperative hernias.

One of the most informative reports on postoperative hernias is the one of Carlucci, who analyzed 700 cases of appendicitis done through an incision in the right lower quadrant and followed for an average of one year to determine how many patients developed abdominal wall defects postoperatively. Thirty-eight defects in the abdominal wall developed in 386 McBurney incisions (9.8 per cent). In 250 cases of right rectus incisions there were 38 (15.2 per cent) abdominal wall defects. Twenty cases done through Kammerer incisions resulted in 1 case (5.0 per cent) of abdominal wall defect. In 18 cases done through a reverse Kammerer incision there were no defects. Transverse incisions in 20 cases resulted in 5 cases (25.0 per cent) of abdominal wall defects. One case (20.0 per cent) out of 5 done through a McBurney incision with a Weir extension developed postoperative defects and in 1 case done through a transverse incision with a Weir extension no hernia developed.

Of particular interest is a comparison between "clean" cases and "drained" cases. Of the clean cases 196 McBurney incisions resulted in 5 cases (2.5 per cent) of abdominal wall defects. Three cases of McBurney incision with a Weir extension resulted in no abdominal wall defects. In 128 right rectus incisions there were 4 instances (3.1 per cent) of abdominal wall defects. Eighteen Kammerer incisions and 15 reverse Kammerer incisions healed without complications. One postoperative abdominal wall defect developed in 10 transverse incisions (10 per cent). In the drained cases 166 McBurney incisions were followed by 31 (18.6 per cent) abdominal wall defects. Of 2 McBurney incisions with Weir extensions 1 postoperative hernia (50.0 per cent) developed. Of 90 cases done through right rectus incisions 28 (31.1 per cent) abdominal wall defects developed. Of 2 Kammerer incisions 1 (50.0 per cent) failed to heal properly. Three reverse Kammerer incisions healed without complication. In 2 of 7 transverse incisions (28.0 per cent) abdominal wall defects developed later. Excluding the cases done through the Kammerer incisions and the McBurney incisions with Weir extensions, which are too small to be statistically significant, the highest percentage of abdominal wall defects occurred in cases in which drainage was employed and the operation performed through a split rectus incision.

In this series of 700 cases about twice as many defects occurred in male patients as in female patients. The figures given by Carlucci for the operative results in male patients are as follows:

Male Patients	Cases, Number	Defects, Number	Defects, Per Cent
McBurney incision (clean)	125	4	3.5
Rectus incision (clean)	46	2	4.3
McBurney incision (drained)	160	29	18.1
Rectus incision (drained)	59	22	37.2

In summarizing all postoperative abdominal wall defects the author presents the following figures:

Incision	Hernia	Diastasis	Bulge	Weakness	Muscle Paralysis	Total
McBurney	16	1	18	3	..	38
Right rectus	12	10	12	2	2	38
Kammerer	..	..	1	..	..	1
Transverse	4	..	1	..	..	5
McBurney with Weir extension	..	..	1	..	..	1
	32	11	33	5	2	83

Thus there were 32 hernias in 700 cases (4.5 per cent) and 51 other defects (7.2 per cent). Sixteen McBurney incisions occurred in 386 cases (4.2 per cent) and 12 right rectus hernias occurred in 250 cases (4.8 per cent).

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POSSIBLE HERXHEIMER REACTION FOLLOWING PENICILLIN

To the Editor:—A white youth aged 20 was examined because of a penile lesion situated on the proximal end of the shaft on the ventral surface. The lesion had appeared one month after coitus and had been present three weeks. He stated that several dark field examinations had been negative, as had been two Kahn reactions. He had received 4 Gm. of sulfadiazine daily for one week; the last dose was given two days before the present examination. This, together with local penicillin paste, had failed to cause regression in the lesion. He had a painful mass in the left groin. Examination revealed the aforementioned genital lesion, which presented dual morphologic characteristics of chancre and chancroid. The left inguinal nodes were matted in a mass the size of a large lemon, and tender. There was shotty, discrete, nontender lymphadenopathy of the right inguinal chain. Examination was otherwise not remarkable. Dark field examinations of the lesion did not reveal Treponema pallidum; two Kahn reactions, however, were strongly positive. A stained smear revealed organisms suggestive of streptobacilli (Hemophilus ducreyi). The provisional diagnosis was primary syphilis perhaps complicated with chancroid. A hemogram and urinalysis were negative. The patient was given 20,000 units of penicillin every three hours intramuscularly. Following the second injection there appeared a symmetrical, macular eruption of the thorax, abdomen and upper extremities which appeared to be a classic macular syphiloderm. There was associated fever, painless bilateral axillary lymphadenopathy and increased tenderness in the left bubo. Within the next twelve hours the eruption vanished without trace, the axillary lymphadenopathy vanished and the patient became afebrile. He has subsequently received two and a half million units of penicillin in 40,000 unit doses without untoward sequelae and with complete regression of the genital lesion and associated lymphadenopathy. The following explanations of the dermatopathy were considered: 1. Macular syphiloderm; this seems unlikely because of the evanescent nature of the eruption. 2. Drug reaction secondary to sulfadiazine (delayed); this seems improbable in view of the negative urinalysis and the delay between the cessation of sulfonamide therapy (forty-eight hours) and the appearance of the eruption. 3. Herxheimer reaction caused by penicillin. 4. Transient toxic reaction due to penicillin. The most probable of these solutions seems to be the third.

M. C., A. U. S.

ANSWER.—It is not uncommon for a person to acquire more than one venereal disease at a time. Because of the matted lymphadenopathy in the left groin and the failure of the genital lesion to heal, it would have been desirable to perform an intradermal test for lymphogranuloma venereum using the virus antigen and a deep smear for Donovan's bodies, because of the possibility of granuloma inguinale. The antecedent local therapy to the lesion would probably be sufficient to kill surface spirochetes if these organisms had been present, although a lymph node puncture of the shotty nodes in the right groin could have been tried.

If the genital lesion has healed as a result of the antisyphilitic therapy given, granuloma inguinale would be reasonably ruled out, though additional therapy might be necessary with sulfadiazine, particularly if the other venereal disease possibly present is lymphogranuloma venereum.

It is not possible to state with certainty the cause of the transient generalized eruption following the commencement of treatment with penicillin. The most likely explanation would seem to be that it was the result of therapeutic shock (Herxheimer reaction). The timing is approximately correct and such reactions accompanied by fever are known to occur within the first twenty-four hours in from 60 to 90 per cent of cases treated with penicillin, as shown in articles in THE JOURNAL by J. F. Mahoney and others (Sept. 9, 1944, p. 63), J. E. Moore and others (Sept. 9, 1944, p. 67), William Leifer, (Dec. 29, 1945, p. 1247) and Leifer and Martin (Jan. 26, 1946, p. 202).

The secondary eruption may occasionally appear first with the commencement of antisyphilitic therapy, especially if the chancre has been present three or four weeks as in the case cited. J. F. Mahoney, in fact, mentions 1 such case in his preliminary report of the first 4 cases of primary syphilis treated with penicillin (*Ven. Dis. Inform.* **24**:355 [Dec.] 1943). In such cases the secondary eruption may appear prior to therapy and be precipitated by the spirillicidal drug, which destroys the organisms in the lesions and causes a local reaction which makes the individual foci become visible. Macular syphiloderms are noted for their transient nature and frequently are overlooked in hasty physical examination. The evanescent nature of the eruption is accordingly not against this possibility. It is unlikely that this is a drug eruption either from sulfadiazine or from penicillin. Most allergic penicillin eruptions which come on with the initiation of treatment are urticarial in nature and tend to persist and increase if penicillin of the same brand and lot number is continued.

POLIOMYELITIS IN BISMUTH TREATED PATIENTS

To the Editor:—In view of Calabrese's results in the treatment of 1 case of poliomyelitis with bismuth, it would be interesting to know if there is any record of the occurrence of poliomyelitis in a patient receiving bismuth therapy.

Henry G. Morton, M.D., Sarasota, Fla.

ANSWER.—Records of such cases have not been found.

WEED DESTRUCTION CAMPAIGN

To the Editor:—The community of Croton-on-Hudson, N. Y., has a permanent population of 4,000 and a summer population of approximately 5,500 to 5,800. Its geographic area is about 10 square miles. This community is contemplating a ragweed depollinating program to make the area a healthier place for hay fever sufferers. The location is approximately 35 miles north of New York City on the Hudson River and is fairly heavily wooded. Before this program is instituted answers to the following questions are desired: Is a depollinating program feasible and practical for a community of this size? If not, why? What steps must be taken to eliminate ragweed? Is it necessary to destroy the weed entirely to reduce the pollen count substantially? Has a similar project been successful elsewhere? If so, where? Where should one apply to have a reliable pollen count done? What would be the cost? If the project is feasible, when is the best time to embark on it?

A. Victor Landes, M.D., Harmon, N. Y.

ANSWER.—The answer to the first question does not depend on the size of the community but on its situation. If a community is insulated on all sides with a wide strip of water or forested land, the size of the city makes little difference. Croton-on-Hudson, N. Y., is not favorably situated because of the adjacent cultivated areas. Ragweed pollen would be blown into the city from farm lands in northern New Jersey even if every ragweed plant in the city should be destroyed.

Permanent riddance of ragweed from any community in which it is well established is well nigh impossible because of the longevity and abundance of viable seeds in the soil. Annual riddance can be best accomplished by uprooting the weeds, but recent experiments have shown that chemical destruction is entirely feasible. However, it must be noted that complete destruction of the weeds during one season will not appreciably affect the presence of weeds the next season, nor will complete destruction of ragweeds before the time of shedding of pollen prevent toxic amounts of pollen being blown into the community from areas as far away as 50 or 75 miles.

Apparently successful weed destruction campaigns have been carried out in a few places, but in only one instance have control tests of the air been made before, during and after the campaign in order to determine its effectiveness. In Sault Ste. Marie, Mich., and Bar Harbor, Maine, in past years local efforts have been directed toward ragweed destruction and have been deemed successful, though no atmospheric tests were made. Since both these places are fairly well insulated it should be possible by diligent weed destruction to reduce the pollen content of the air very considerably. In Chicago, control tests carried on during a three year campaign showed a higher total pollen content of the air each year during which the campaign was carried on. There is no hope of reducing the pollen content of the upper air by local weed eradication in a community surrounded by millions of acres of ragweeds in farm lands.

Any one contemplating atmospheric studies should get in touch with the chairman of the National Pollen Survey Committee, Dr. Matthew Walzer, 20 Plaza Street, Brooklyn 17, regarding standard methods and apparatus as well as possible assistance in counting. If total eradication of ragweeds is contemplated, work should be started by the last week of July. Atmospheric tests should be started by the first of August and continued as long as pollen is found on the slides.

DRINKING WATER STERILIZERS

To the Editor:—A number of people living beside an inland lake are installing Buhring System Purifiers, so that they may drink the lake water in their cottages. They are told that these systems absolutely sterilize the water and that they need not worry about typhoid or similar infections.

Paul C. F. Vietzke, M.D., Valparaiso, Ind.

ANSWER.—The type of household filter mentioned if properly installed and operated will remove suspended matter from water and some objectionable tastes, depending on their type and intensity. It should not be depended on for disinfection. If used with water containing free chlorine, reasonably good results should be obtained. Care must be taken to clean the filter at regular intervals; otherwise bacteria may grow in the filter mediums.

LANDRY'S PARALYSIS AND UREMIA

To the Editor:—In the query relative to the occurrence of Landry's paralysis terminally in uremia (THE JOURNAL, May 4, 1946), the reply notwithstanding such paralyses have been previously observed terminally in uremic patients. Finch and Marchand (*Am. J. M. Sc. 206: 507* [Oct.] 1943) describe a terminal, progressively ascending diminution in motor power in their 2 cases of fatal uremia. Their description is strikingly similar to that given by the questioner. Finch and Marchand attributed these neurologic phenomena to potassium toxicity manifested by concomitant hyperpotassemia. Evidence was adduced to show that this potassium poisoning likewise produced cardiac arrest and death in both instances.

Keith, Burchell and Bogenstoss (*Am. Heart J.* 27: 817 [June] 1944), however, make no references to complicating motor manifestations in their 3 hyperpotassemic patients with uremia.

Robert Tarail, Captain, M. C., A. U. S.